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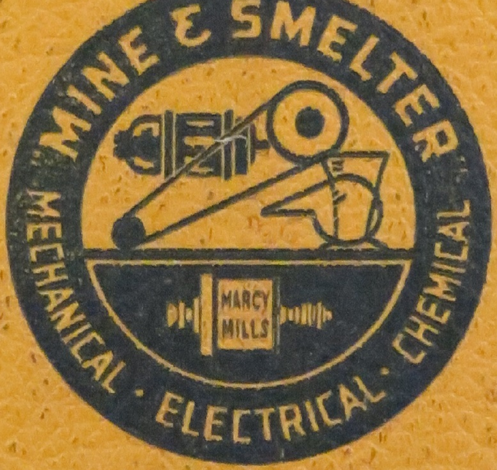
MACHINERY


MINE & SMELTER
MARCY MILLS
MECHANICAL · ELECTRICAL · CHEMICAL

CATALOG No 50

The
Mine & Smelter
Supply Co.

DENVER - EL PASO - SALT LAKE CITY
— NEW YORK —

Max Künzel

Catalog No. 50

INDUSTRIAL SUPPLIES and MACHINERY

- Bolts, Screw Products
- Boilers, Pumps
- Chain, Rails and Fasteners
- Chemicals
- Contractors Equipment
- Grinding Wheels and Coated Abrasives
- Hand Tools
- Laboratory and First Aid Supplies
- Machine and Power Tools
- Machine Shop Tools and Supplies
- Mechanical Rubber Goods
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- Rope, Wire and Manila
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- Transmission and Materials Handling Equipment
- Tubing, Pipe, Fittings and Valves
- Waterworks Supplies
- Lumber Yard and Implement Dealers Supplies

A Complete Line For Contractors, Fabricators, Industrials, Manufacturers, Municipalities, Mining Industries, Railroads and Utilities.

Exclusively Wholesale

The Mine and Smelter Supply Co.

DENVER, COLO. EL PASO, TEXAS SALT LAKE CITY, UTAH
NEW YORK CITY

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IMPORTANT INFORMATION . . .

LISTS AND PRICES

We have used a system in pricing our catalog that should be convenient as an aid in arriving at a **quick approximate value** on the goods listed.

All List Prices printed in this catalog are our own when printed in **BOLD FACE TYPE ($35.00)**, such lists carry our discount which will be quoted on application. Manufacturers' or Standard List Prices are printed in light face type ($35.00), such lists are subject to usual selling discounts which will be quoted on application.

Due to constant changes and fluctuations in the market, however, **All Lists and Discounts are subject to revision and change without notice.**

All prices are exclusive of any tax which is now or may be assessed on the part of the Federal or State Government and any such tax shall be paid by the purchaser.

QUOTATIONS

Quotations made by this company, or its representatives are subject to change without notice or to prior sale and, unless otherwise agreed, are binding only for immediate acceptance. All sales are made subject to strikes, accidents, or other delays beyond our control.

ORDERS

All orders placed with us, regardless of how transmitted, are subject to our approval and acceptance. Orders involving special merchandise not regularly stocked by us are subject to cancellation only at the approval and terms of the manufacturer on whom our order in turn has been placed. In ordering, please be sure to state clearly:

1. Name and post office address to which billing is to be sent.
2. Name and address to which shipment is to be made.
3. How you wish us to ship; that is, whether by railroad freight, truck, express, parcel post, etc.
4. Quantity of each item included in your order.
5. Name and description of article ordered, size when necessary, and catalog number of item.
6. **Confirming Orders**—confirming orders should have the word **"Confirmation"** clearly marked on the face of the order. Confirming orders which are not marked in this manner may be mistaken for **"original orders"** and consequently duplicated. We cannot be responsible for expense and inconveniences that result in such instances.

TERMS

1. Shipment will go forward on open account terms where credit has been previously established with us. Under this arrangement, invoices are normally due and payable thirty days after the date of billing.

2. Invoices are subject to cash discount only to the extent indicated on the billing, and such discount may be deducted from remittance when forwarded. Charges covering all taxes, containers, and transportation costs are net, and should be deducted before computing cash discount.

3. Customers desiring credit accommodations not previously arranged should forward commercial references and financial information with orders, in order to avoid shipping delay. Authority to ship on basis of payment on receipt of merchandise will be otherwise presumed.

ADJUSTMENTS

1. Claims for adjustment of merchandise or invoices will be given careful consideration. Such claims should state the date and number of invoice involved. Where an error in shipment of merchandise has taken place, we should be advised at once and the merchandise held subject to our instructions.

2. Our responsibility for shipment ceases when we get a clear receipt from Transportation Company. All shortages or damages that are caused by the Transportation Company, should be reported to the Carriers' Agent for inspection. Such shortages or damages should be noted on the Carriers' damage report or receipt to support claim for loss or damage.

RETURNED MERCHANDISE

1. All merchandise returned will be received subject to our acceptance. Transportation and handling charges will be assessed and deducted from the amount of the credit.

2. In order to save unnecessary transportation expense, goods should not be returned until we have furnished shipping instructions.

CABLE ADDRESS: **Mintorply.**

CODES USED: Western Union, Bentley, Bedford and McNeill

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— BUILT —
HARDWARE CATALOGS
COMPILED, PRINTED AND BOUND
— BY —
THE NORTH AMERICAN PRESS
MILWAUKEE - - - - WISCONSIN

PHYSICAL AND CHEMICAL PROPERTIES OF STEEL

Our stock of merchant bars, structurals, plates and sheets are classified as low carbon steel.
Our stock of cold finished steel is classified according to its AISI number.

Physicals

The table of physicals below represents average results compiled from many tests. It is offered as a general guide to the probable physical expectancy of the steels listed. It must be understood that in individual tests these steels may develop results differing widely from the averages shown. The average properties shown are based on a 1 in. round section.

Steel	Tensile strength, psi	Yield point, psi	% Elong. in 2 in.	% Red. of area	Hardness		Machinability rating
					Brinell	Rockwell "C"	
Low carbon, hot rolled	63,000	46,000	38	62	126	B72	50
AISI-C1018, cold drawn	82,000	70,000	20	57	163	B85	65
AISI-B1112	82,500	71,000	15	43	170	B87	100

Chemical Properties

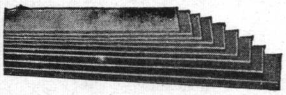
The table below shows the permissible variation in chemical composition.

Steel	C	Mn	P Max.	S Max.
AISI-C1010, Low carbon	0.08-0.13	0.30-0.60	0.04	0.05
AISI-C1018	0.15-0.20	0.60-0.90	0.04	0.05
AISI-B1112	0.13 max.	0.70-1.00	0.07–0.12	0.16–0.23

C—Carbon
Mn—Manganese
P—Phosphorus
S—Sulphur

HOT ROLLED CARBON STEEL BARS

STRIP OR BANDS



In Straight Lengths

Will bend flat on itself, either with or against the grain, without cracking.

Net Extras for Size Per 100 Pounds

⅛ (.125) in. Thick

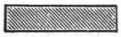
Size, in.	Extra	Wt. ft., lbs.	Size, in.	Extra	Wt. ft., lbs.
½	$1.65	.213	2½	$0.85	1.063
⅝	1.50	.266	2¾	.85	1.169
¾	1.35	.319	3	.85	1.275
⅞	1.30	.372	3¼	.75	1.381
1	1.20	.425	3½	.75	1.488
1⅛	1.20	.477	3¾	.75	1.594
1¼	1.15	.531	4	.75	1.700
1⅜	1.15	.584	4½	.65	1.913
1½	1.15	.638	5	.65	2.125
1¾	1.15	.744	5½	.65	2.338
2	1.15	.850	6	.65	2,550
2¼	.85	.956			

No. 10 Ga. (.134 in.) Thick

Size, in.	Extra	Wt. ft., lbs.	Size, in.	Extra	Wt. ft., lbs.
½	$1.55	.228	2¼	$0.85	1.025
⅝	1.45	.285	2½	.85	1.139
¾	1.30	.342	2¾	.85	1.253
⅞	1.25	.399	3	.85	1.367
1	1.20	.456	3¼	.75	1.481
1⅛	1.20	.513	3½	.75	1.595
1¼	1.15	.570	4	.75	1.822
1⅜	1.15	.627	4½	.65	2.050
1½	1.15	.683	5	.65	2.278
1¾	1.15	.797	5½	.65	2.506
2	1.15	.911	6	.65	2.734

$\frac{3}{16}$ (.1875) in. Thick

Size, in.	Extra	Wt. ft., lbs.	Size, in.	Extra	Wt. ft., lbs.
½	$1.55	.319	2¼	$0.85	1.43
⅝	1.45	.398	2½	.85	1.59
¾	1.30	.478	2¾	.85	1.75
⅞	1.25	.558	3	.85	1.91
1	1.20	.638	3¼	.75	2.07
1⅛	1.20	.717	3½	.75	2.23
1¼	1.15	.797	4	.75	2.55
1⅜	1.15	.877	4½	.65	2.87
1½	1.15	.956	5	.65	3.19
1¾	1.15	1.12	5½	.65	3.51
2	1.15	1.28	6	.65	3.83



FLATS

Net Extras for Size Per 100 Pounds

¼ in. Thick

Size, in.	Extra	Wt. ft., lbs.	Size, in.	Extra	Wt. ft., lbs.
⅜	$1.55	.319	2¼	$0.35	1.91
½	1.10	.425	2½	.35	2.13
⅝	.90	.531	2¾	.35	2.34
¾	.75	.638	3	.35	2.55
⅞	.75	.744	3¼	.35	2.76
1	.60	.850	3½	.35	2.98
1⅛	.60	.956	3¾	.35	3.19
1¼	.60	1.06	4	.35	3.40
1⅜	.60	1.17	4¼	.25	3.61
1½	.50	1.28	4½	.25	3.83
1⅝	.50	1.38	5	.25	4.25
1¾	.50	1.49	5½	.25	4.68
2	.50	1.70	6	.25	5.10

$\frac{5}{16}$ in. Thick

Size, in.	Extra	Wt. ft., lbs.	Size, in.	Extra	Wt. ft., lbs.
½	$1.10	.531	2¼	$0.35	2.39
⅝	.90	.664	2½	.35	2.66
¾	.75	.797	2¾	.35	2.92
⅞	.75	.930	3	.35	3.19
1	.60	1.06	3¼	.35	3.45
1⅛	.60	1.20	3½	.35	3.72
1¼	.60	1.33	4	.35	4.25
1⅜	.60	1.46	4½	.25	4.78
1½	.50	1.59	5	.25	5.31
1¾	.50	1.86	5½	.25	5.84
2	.50	2.13	6	.25	6.38

⅜ in. Thick

Size, in.	Extra	Wt. ft., lbs.	Size, in.	Extra	Wt. ft., lbs.
½	$0.90	.638	2¼	$0.35	2.87
⅝	.75	.797	2½	.35	3.19
¾	.60	.957	2¾	.35	3.51
⅞	.60	1.12	3	.35	3.83
1	.50	1.28	3¼	.35	4.14
1⅛	.50	1.43	3½	.35	4.46
1¼	.50	1.59	4	.35	5.10
1⅜	.50	1.75	4½	.25	5.74
1½	.40	1.91	5	.25	6.38
1⅝	.40	2.07	5½	.25	7.01
1¾	.40	2.23	6	.25	7.65
2	.40	2.55			

$\frac{7}{16}$ in. Thick

Size, in.	Extra	Wt. ft., lbs.	Size, in.	Extra	Wt. ft., lbs.
¾	$0.60	1.12	2¾	$0.35	4.09
⅞	.60	1.30	3	.35	4.46
1	.50	1.49	3¼	.35	4.83
1¼	.50	1.86	3½	.35	5.21
1⅜	.50	2.05	4	.35	5.95
1½	.40	2.23	4½	.25	6.69
1¾	.40	2.60	5	.25	7.44
2	.40	2.98	5½	.25	8.18
2¼	.35	3.35	6	.25	8.93
2½	.35	3.72			

½ in. Thick

Size, in.	Extra	Wt. ft., lbs.	Size, in.	Extra	Wt. ft., lbs.
⅝	$0.70	1.06	2¼	$0.30	3.83
¾	.60	1.28	2½	.30	4.25
⅞	.60	1.49	2¾	.25	4.68
1	.50	1.70	3	.25	5.10
1⅛	.50	1.91	3¼	.25	5.53
1¼	.50	2.13	3½	.25	5.95
1⅜	.50	2.34	4	.25	6.80
1½	.35	2.55	4½	.20	7.65
1⅝	.35	2.76	5	.20	8.50
1¾	.35	2.98	5½	.15	9.35
2	.35	3.40	6	.15	10.20

⅝ in. Thick

Size, in.	Extra	Wt. ft., lbs.	Size, in.	Extra	Wt. ft., lbs.
¾	$0.60	1.59	2½	$0.30	5.31
⅞	.60	1.86	2¾	.25	5.84
1	.50	2.13	3	.25	6.38
1⅛	.50	2.39	3¼	.25	6.91
1¼	.50	2.66	3½	.25	7.44
1⅜	.50	2.92	4	.25	8.50
1½	.35	3.19	4½	.20	9.56
1⅝	.35	3.45	5	.20	10.63
1¾	.35	3.72	5½	.15	11.69
2	.35	4.25	6	.15	12.75
2¼	.30	4.78			

¾ in. Thick

Size, in.	Extra	Wt. ft., lbs.	Size, in.	Extra	Wt. ft., lbs.
⅞	$0.60	2.23	2½	$0.30	6.38
1	.50	2.55	2¾	.25	7.01
1⅛	.50	2.87	3	.25	7.65
1¼	.50	3.19	3¼	.25	8.29
1⅜	.50	3.51	3½	.25	8.93
1½	.35	3.83	4	.25	10.20
1⅝	.35	4.14	4½	.20	11.48
1¾	.35	4.46	5	.20	12.75
2	.35	5.10	5½	.15	14.03
2¼	.30	5.74	6	.15	15.30

⅞ in. Thick

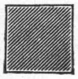
Size, in.	Extra	Wt. ft., lbs.	Size, in.	Extra	Wt. ft., lbs.
1	$0.45	2.98	2¾	$0.25	8.18
1⅛	.45	3.35	3	.25	8.93
1¼	.45	3.72	3¼	.25	9.67
1⅜	.45	4.09	3½	.25	10.41
1½	.35	4.46	4	.25	11.90
1¾	.35	5.21	4½	.20	13.39
2	.35	5.95	5	.20	14.88
2¼	.30	6.69	5½	.15	16.36
2½	.30	7.44	6	.15	17.85

1 in. Thick

Size, in.	Extra	Wt. ft., lbs.	Size, in.	Extra	Wt. ft., lbs.
1¼	$0.45	4.25	3¼	$0.25	11.05
1½	.35	5.10	3½	.25	11.90
1¾	.35	5.95	4	.25	13.60
2	.35	6.80	4½	.20	15.30
2¼	.30	7.65	5	.20	17.00
2½	.30	8.50	5½	.15	18.70
2¾	.25	9.35	6	.15	20.40
3	.25	10.20			

HOT ROLLED CARBON STEEL BARS

SQUARES



Net Extras for Size Per 100 Pounds

Size, in.	Extra	Wt. ft., lbs.
¼	$1.90	.213
5/16	1.40	.332
⅜	.80	.478
7/16	.65	.651
½	.50	.850
9/16	.35	1.08
⅝	.25	1.33
¾	.15	1.91
⅞	.15	2.60
1	.10	3.40
1⅛	.10	4.30
1¼	.10	5.31
1⅜	.10	6.43
1½	Base	7.65
1⅝	Base	8.98
1¾	Base	10.41
1⅞	Base	11.96
2	.15	13.60
2¼	.15	17.21
2½	.15	21.25
2⅝	.15	23.42
2¾	.15	25.71
3	.30	30.60

ROUNDS

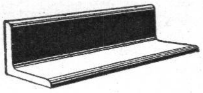
Net Extras for Size Per 100 Pounds

Size, in.	Extra	Wt. ft., lbs.
3/16	$2.30	.094
¼	1.90	.167
5/16	1.40	.261
⅜	.80	.376
7/16	.65	.516
½	.50	.668
9/16	.35	.845
⅝	.25	1.04
¾	.15	1.50
⅞	.15	2.04
1	.10	2.67
1⅛	.10	3.38
1¼	.10	4.17
1 5/16	.10	4.60
1⅜	.10	5.05
1½	Base	6.01
1⅝	Base	7.05
1¾	Base	8.18
1⅞	Base	9.39
2	.15	10.68
2⅛	.15	12.06
2¼	.15	13.52
2 3/16	.15	15.06
2½	.15	16.69
2⅝	.15	18.40
2¾	.15	20.20
2⅞	.15	22.07
3	.30	24.03

HOT ROLLED CARBON STEEL SHAPES

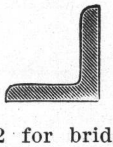
BAR SIZE ANGLES

Net Extras for Size Per 100 Pounds



Size, in.	Extra	Wt. per ft., lbs.	Wt. 20 ft. bar, lbs.
½x ½x⅛	$2.20	.38	7.60
⅝x ⅝x⅛	1.60	.48	9.60
¾x ¾x⅛	1.20	.59	11.80
⅞x ⅞x⅛	1.00	.70	14.00
1 x ⅝x⅛	1.20	.64	12.80
1 x ¾x⅛	1.00	.70	14.00
1 x1 x⅛	.80	.80	16.00
3/16	.75	1.16	23.20
¼	.75	1.49	29.80
1⅛x1⅛x⅛	.80	.91	18.20
1¼x1¼x⅛	.80	1.01	20.20
3/16	.75	1.48	29.60
¼	.75	1.92	38.40
1⅜x ⅞x⅛	1.00	.91	18.20
3/16	.90	1.32	26.40
1½x1¼x3/16	.65	1.64	32.80
1½x1½x⅛	.65	1.23	24.60
3/16	.50	1.80	36.00
¼	.50	2.34	46.80
3/16	.65	1.80	36.00
1¾x1¾x⅛	.65	1.44	28.80
3/16	.50	2.12	42.40
¼	.50	2.77	55.40
2 x1¼x3/16	.65	1.96	39.20
¼	.65	2.55	51.00
2 x1½x⅛	.65	1.44	28.80
3/16	.55	2.12	42.40
¼	.55	2.77	55.40
2 x2 x⅛	.65	1.65	33.00
3/16	.50	2.44	48.80
¼	.50	3.19	63.80
2 x2 x5/16	.50	3.92	78.40
⅜	.50	4.70	94.00
2¼x1½x3/16	.55	2.28	45.60
¼	.50	2.98	59.60
2½x1½x3/16	.55	2.44	48.80
¼	.55	3.19	63.80
5/16	.55	3.92	78.40
2½x2 x3/16	.50	2.75	55.00
¼	.50	3.62	72.40
5/16	.50	4.50	90.00
⅜	.50	5.30	106.00
2½x2½x3/16	.50	3.07	61.40
¼	.50	4.10	82.00
5/16	.50	5.00	100.00
⅜	.50	5.90	118.00
½	.50	7.70	154.00

STRUCTURAL, ANGLES



ASTM—A-7-42 for bridges and buildings. Minimum tensile strength 60,000 to 72,000 lbs. per square inches.

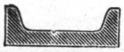
Net Extras for Size Per 100 Pounds

Thickness, in.	Extra	Wt. ft., lbs.
3x2 in. Legs		
3/16	$0.40	3.07
¼	Base	4.1
5/16	Base	5.0
⅜	Base	5.9
½	Base	7.7
3x2½ in. Legs		
¼	Base	4.5
5/16	Base	5.6
⅜	Base	6.6
½	Base	8.5
3x3 in. Legs		
3/16	.25	3.71
¼	Base	4.9
5/16	Base	6.1
⅜	Base	7.2
7/16	Base	8.3
½	Base	9.4
3½x2½ in. Legs		
¼	.15	4.9
5/16	.15	6.1
⅜	.15	7.2
½	.15	9.4
3½x3 in. Legs		
¼	.20	5.4
5/16	.20	6.6
⅜	.20	7.9
½	.20	10.2
3½x3½ in. Legs		
¼	.15	5.8
5/16	.15	7.2
⅜	.15	8.5
7/16	.15	9.8
½	.15	11.1
4x3 in. Legs		
¼	.45	5.8
5/16	.20	7.2
⅜	.20	8.5
7/16	.20	9.8
½	.20	11.1
⅝	.20	13.6
4x3½ in. Legs		
¼	.40	6.2
5/16	.20	7.7
⅜	.20	9.1
7/16	.20	10.6
½	.20	11.9
4x4 in. Legs		
¼	.35	6.6
5/16	.20	8.2
⅜	.20	9.8
7/16	.20	11.3
½	.20	12.8
⅝	.20	15.7
¾	.20	18.5

Thickness, in.	Extra	Wt. ft., lbs.
5x3 in. Legs		
¼	$0.40	6.6
5/16	.20	8.2
⅜	.20	9.8
7/16	.20	11.3
½	.20	12.8
5x3½ in. Legs		
5/16	.25	8.7
⅜	.25	10.4
7/16	.25	12.0
½	.25	13.6
⅝	.25	16.8
¾	.25	19.8
5x5 in. Legs		
⅜	.35	12.3
½	.35	16.2
⅝	.35	20.0
¾	.35	23.6
6x3½ in. Legs		
5/16	.35	9.8
⅜	.35	11.7
½	.35	15.3
6x4 in. Legs		
5/16	.35	10.3
⅜	.30	12.3
7/16	.30	14.3
½	.30	16.2
⅝	.30	20.0
¾	.30	23.6
⅞	.30	27.2
6x6 in. Legs		
⅜	.25	14.9
7/16	.25	17.2
½	.25	19.6
⅝	.25	24.2
¾	.25	28.7
⅞	.25	33.1
1	.25	37.4
7x4 in. Legs		
⅜	.30	13.6
½	.30	17.9
⅝	.30	22.1
8x4 in. Legs		
7/16	.30	17.2
½	.30	19.6
8x6 in. Legs		
½	.30	23.0
¾	.30	33.8
8x8 in. Legs		
½	.25	26.4
⅝	.25	32.7

HOT ROLLED CARBON STEEL SHAPES

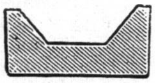
BAR SIZE CHANNELS



Net Extras for Size Per 100 Pounds

Size, in.	Extra	Wt. per ft., lbs.	Wt. 20 ft. bar, lbs.
½x ¼x⅛	$2.50	.28	5.60
¾x 5/16x⅛	1.25	.50	10.00
¾x ⅜xNo. 15	1.85	.40	8.00
¾x ⅜x⅛	1.25	.52	10.40
⅞x ⅜x⅛	1.25	.58	11.60
⅞x 7/16x⅛	1.25	.69	13.80
1 x ⅜x⅛	1.00	.68	13.60
1 x ½x⅛	1.00	.79	15.80
1⅛x 9/16x3/16	1.00	1.16	23.20
1¼x ½x⅛	1.00	.93	18.60
1½x ½x⅛	1.00	1.04	20.80
1½x ½x¼	1.00	1.53	30.60
1½x 9/16x3/16	1.00	1.36	27.20
1½x ¾x⅛	1.00	1.17	23.40
1½x1½x3/16	1.00	2.65	53.00
1¾x ½x3/16	.60	1.55	31.00
2 x ½x⅛	.90	1.34	26.80
2 x 9/16x3/16	.60	1.76	35.20
2 x ⅝x¼	.60	2.18	43.60
2 x1 x⅛	.90	1.59	31.80
2 x1 x3/16	.60	2.32	46.40
2½x ⅝x3/16	.60	2.27	45.40

STRUCTURAL CHANNELS



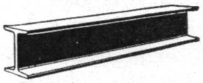
A.S.T.M.—A-7-46 for bridges and buildings.

Tensile strength 60,000 to 72,000 lbs. per sq. in.

Net Extras for Size Per 100 Pounds

Depth channel, in.	Wt. per ft., lbs.	Extra	Thickness web, in.	Width flange, in.
3	4.1	$0.80	.170	1.410
	5.0	.80	.258	1.498
	6.0	.80	.356	1.596
4	5.4	.60	.180	1.580
	7.25	.60	.320	1.720
5	6.7	.45	.190	1.750
	9.0	.45	.325	1.885
6	8.2	.50	.200	1.920
	10.5	.50	.314	2.034
	13.0	.50	.437	2.157
7	9.8	.50	.210	2.090
	12.25	.50	.314	2.194
	14.75	.50	.419	2.299
8	11.5	.45	.220	2.260
	13.75	.45	.303	2.343
	18.75	.45	.487	2.527
9	13.4	.40	.230	2.430
	15.0	.40	.285	2.485
	20.0	.40	.448	2.648
10	15.3	.35	.240	2.600
	20.0	.35	.379	2.739
	25.0	.35	.526	2.886
	30.0	.35	.673	3.033
12	20.7	.30	.280	2.940
	25.0	.30	.387	3.047
	30.0	.30	.510	3.170
13	31.8	.35	.375	4.000
15	33.9	.30	.400	3.400
	40.0	.30	.520	3.520
18	45.8	.35	.500	4.000

STRUCTURAL I-BEAMS



A.S.T.M. — A-7-46 for bridges and buildings.

Tensile strength 60,000 to 72,000 lbs. per sq. in.

Net Extra for Size Per 100 Pounds

Size, in.	Wt. per ft., lbs.	Extra	Thickness web, in.	Width flange, in.
3	5.7	$0.80	.170	2.330
	7.5	.80	.349	2.509
4	7.7	.55	.190	2.660
	9.5	.55	.326	2.796
5	10.0	.40	.210	3.000
	14.75	.40	.494	3.284
6	12.5	.50	.230	3.330
	17.25	.50	.465	3.565
7	15.3	.45	.250	3.660
	20.0	.45	.450	3.860
8	18.4	.40	.270	4.000
	23.0	.40	.441	4.171
10	25.4	.30	.310	4.660
	35.0	.30	.594	4.944
12	31.8	.30	.350	5.000
	35.0	.30	.428	5.078
	40.8	.30	.460	5.250
	50.0	.30	.687	5.477
15	35.0	.25	.330	5.500
	42.9	.25	.410	5.500
	50.0	.25	.550	5.640
18	54.7	.30	.460	6.000

WIDE FLANGE STRUCTURAL I-BEAMS (CB SECTIONS)

Net Extra for Size Per 100 Pounds

Size, in.	Wt. per ft., lbs.	Extra	Thickness web, in.	Width flange, in.
6x 4	12.0CBL	$0.80	.230	4.000
6x 6	15.5CBS	.80	.240	6.000
8x 5¼	17.0CB81	.50	.230	5.250
8x 6½	24.0CB82	.40	.245	6.500
8x 8	31.0CB83	.35	.288	8.000
	33.0CB83	.35	.300	8.012
	40.0CB83	.35	.365	8.077
10x 5¾	21.0CB101	.40	.240	5.750
	23.0CB101	.40	.240	5.570
	26.0CB101	.40	.259	5.769
10x 8	33.0CB102	.35	.292	7.964
	41.0CB102	.35	.328	8.000
10x10	49.0CB103	.30	.340	10.000
12x 6½	25.0CB121	.35	.240	6.500
	28.0CB121	.35	.240	6.500
	32.0CB121	.35	.273	6.533
12x 8	40.0CB122	.35	.294	8.000
14x 6¾	30.0CB141	.35	.270	6.733
	34.0CB141	.35	.287	6.750
14x 8	43.0CB142	.35	.308	8.000
16x 7	36.0CB161	.35	.299	6.992
	40.0CB161	.35	.307	7.000
18x 7½	47.0CB181	.20	.350	7.942
18x 8¾	64.0CB182	.20	.403	8.715
21x 8¼	59.0CB211	.30	.390	8.230
24x 9	74.0CB241	.30	.430	8.975
	94.0CB241	.30	.516	9.061

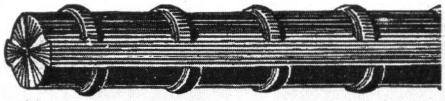
STRUCTURAL H BEAMS

Net Extras for Size Per 100 Pounds

Size, in.	Wt. per ft., lbs.	Extra	Thickness web, in.	Width flange, in.
4x4	13.0	$0.80	.280	4.060
5x5	18.9	.60	.313	5.000
6x6	20.0	.65	.250	6.000
	25.0	.65	.313	6.000

CONCRETE REINFORCING BARS

HOT ROLLED STEEL



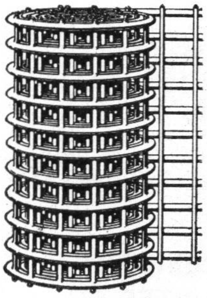
Corrugated Round

Net Extras for Size Per 100 Pounds

Size, in.	Extra	Area, sq. in.	Wt. ft., lbs.
⅜	$0.80	.11	.376
½	.50	.20	.668
⅝	.25	.31	1.043
¾	.15	.44	1.502
⅞	.15	.60	2.044
1	.10	.79	2.670

WIRE REINFORCING FABRIC

ELECTRIC WELDED



An electrically welded wire fabric furnished in rolls or flat sheets in various gauges and spacing of wires, the most common styles appearing in the table below. Other spacing and gauge of wires can be furnished for special requirements.

Unless otherwise specified all fabric is produced in accordance with current ASTM specifications, with a tensile strength of 70,000 lbs. per sq. in. or more.

Two-Way Reinforcement

*In rolls 60 in. wide by 150 ft. long.

Style Nos.	Per 150 ft. roll	Spacing of wires, in.	Ga. of wires, Nos.	Section area per ft. of width sq. in.	Wt. 100 sq. ft., lbs.
66-1010	$3.90	6x6	10	.029	21
66-88	5.20	6x6	8	.041	30
66-66	8.85	6x6	6	.058	42
66-44	8.70	6x6	4	.080	58
44-1010	5.95	4x4	10	.043	31
44-66	10.35	4x4	6	.087	62

*Electric Welded Fabric is generally furnished from the factory in width of four, five and six feet, but can be furnished in multiples of the spacing of longitudinal wires up to a maximum width which varies with the size and spacing of the longitudinals. Approximate maximums: 56-inch to 72-inch for 2- inch spacing; 60-inch to 99-inch for 3-inch spacing; 68-inch to 100-inch for 4-inch spacing and 70-inch to 120-inch for 6-inch.

Variable extras are charged for material furnished in widths less than 40-inch and for lengths under 6 feet. Mesh can be furnished either plain or galvanized. When plain fabric is ordered, the longitudinal wires will be plain but the cross wires will be plain or galvanized at the manufacturers' discretion.

STEEL PLATES

SHEARED

A.S.T.M.—A-7-20

Stock lengths 8 to 12 ft.

Net Extras for Size—Per 100 Pounds

Width, in.	Extra	Wt. ft., lbs.
***3/16 in. Thick**		
54	$0.40	34.43
60	.40	38.25
¼ in. Thick		
36	$0.40	30.60
42	.40	35.70
48	.40	40.80
60	.25	51.00
5/16 in. Thick		
36	$0.25	38.25
42	.25	44.63
48	.25	51.00
60	.10	63.75
⅜ in. Thick		
36	$0.15	45.90
42	.15	53.55
48	.15	61.20
60	Base	76.50
7/16 in. Thick		
36	$0.15	53.55
42	.15	62.48
48	.15	71.40
60	Base	89.25
½ in. Thick		
36	$0.15	61.20
42	.15	71.40

Width, in.	Extra	Wt. ft., lbs.
½ in. Thick Cont'd		
48	$0.15	81.60
60	Base	102.00
9/16 in. Thick		
36	$0.15	68.85
42	.15	80.33
48	.15	91.80
60	Base	114.75
⅝ in. Thick		
36	$0.15	76.50
42	.15	89.25
48	.15	102.00
60	Base	127.50
¾ in. Thick		
36	$0.15	91.80
42	.15	107.10
48	.15	122.40
60	Base	153.00
⅞ in. Thick		
36	$0.15	107.10
48	.15	142.80
60	Base	178.50
1 in. Thick		
36	$0.15	122.40
48	.15	163.20
60	Base	204.00

*For 3/16 in. thick, 48 in. wide and under see Black Sheets.

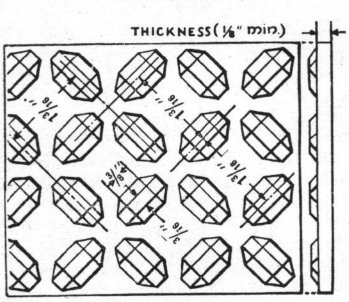
ABRASION RESISTING STEEL PLATES

Made to a special carbon-manganese specification, developed especially for applications requiring resistance to abrasive wear.

Thickness, in.	Size sheet, in.	Extra	Wt. per sheet, lbs.
3/16	36x144	$0.50	282
¼	36x144	.40	367
¼	48x144	.40	490
⅜	48x144	.15	734
⅜	60x144	Base	918

STEEL FLOOR PLATES

MULTIGRIP

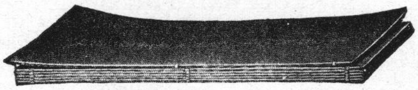


Made from strong rolled steel. Offer maximum safety, giving resistance to slip in all directions. Sweep and drain in any direction.

Thickness, in.	Wt. per sq. ft., lbs.
3/16	8.7
¼	11.25
5/16	13.8

BLACK STEEL SHEETS

HOT ROLLED



Net Extras for Size—Per 100 Pounds

Size, in.	Extra	Wt. sheet, lbs.
***7 Ga. (3/16 in.)**		
30x96	$0.35	150.0
30x120	.35	187.5
36x96	.35	180.0
36x120	.35	225.0
36x144	.35	270.0
42x96	.35	210.0
42x120	.35	262.5
42x144	.35	315.0
48x96	.35	240.0
48x120	.35	300.0
48x144	.35	360.0
8 Ga. (.1644 in.)		
30x96	$0.35	137.5
30x120	.35	171.9
30x144	.35	206.3
36x96	.35	165.0
36x120	.35	206.3
36x144	.35	247.5
42x96	.35	192.5
42x120	.35	240.6
42x144	.35	288.8
48x96	.35	220.0
48x120	.35	275.0
48x144	.35	330.0
60x96	.35	275.0
60x120	.45	343.0
60x144	.45	412.5
10 Ga. (.1345 in.)		
30x96	$0.35	112.5
30x120	.35	140.6
36x96	.35	135.0
36x120	.35	168.0
36x144	.35	202.5
42x96	.35	157.5
42x120	.35	196.9
42x144	.35	236.3
48x96	.35	180.0
48x120	.35	225.0
48x144	.35	270.0
60x120	.45	281.3
60x144	.45	337.5
12 Ga. (.1046 in.)		
30x96	$0.35	87.5
30x120	.35	109.4
36x96	.35	105.0
36x120	.35	131.3
36x144	.35	157.5
42x96	.35	122.5
42x120	.35	153.1

Size, in.	Extra	Wt. sheet, lbs.
12 Ga. (.1046 in.) Continued		
42x144	$0.35	183.8
48x96	.35	140.0
48x120	.35	175.0
48x144	.35	210.0
60x96	.45	175.0
60x120	.45	218.8
60x144	.45	262.5
14 Ga. (.0747 in.)		
30x96	$0.45	62.5
30x120	.45	78.1
30x144	.45	93.7
36x96	.45	75.0
36x120	.45	93.8
36x144	.45	112.5
42x96	.45	87.5
42x120	.45	109.4
42x144	.45	131.3
48x96	.45	100.0
48x120	.45	125.0
48x144	.45	150.0
60x96	.55	125.0
60x120	.55	156.3
60x144	.55	187.5
16 Ga. (.0598 in.)		
30x96	$0.50	50.0
30x120	.50	62.5
36x96	.50	60.0
36x120	.50	75.0
36x144	.50	90.0
42x96	.50	70.0
42x120	.50	87.5
42x144	.50	105.0
48x96	.50	80.0
48x120	.50	100.0
48x144	.50	120.0
60x96	.60	100.0
60x120	.60	125.0
60x144	.60	150.0
18 Ga. (.0478 in.)		
30x96	$0.65	40.0
30x120	.65	50.0
36x96	.65	48.0
36x120	.65	60.0
42x96	.65	56.0
42x120	.65	70.0
48x96	.65	64.0
48x120	.65	80.0
48x144	.65	96.0

*For 3/16 in. thick, wider than 48 in. see Steel Plates.

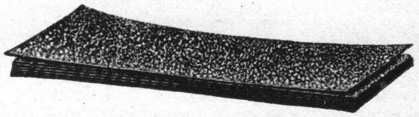
COLD ROLLED CARBON

Size, in.	Extra	Wt. sheet, lbs.
20 Ga. (.0359 in.)		
30x96	$0.45	30.0
30x120	.45	37.5
36x96	.45	36.0
36x120	.45	45.0
42x96	.35	42.0
42x120	.35	52.5
48x96	.35	48.0
48x120	.35	60.0
22 Ga. (.0299 in.)		
30x96	$0.55	25.0
30x120	.55	31.3
36x96	.55	30.0
36x120	.55	37.5
42x96	.40	35.0
42x120	.40	43.8
48x96	.40	40.0
48x120	.40	50.0

Size, in.	Extra	Wt. sheet, lbs.
24 Ga. (.0239 in.)		
30x96	$0.70	20.0
30x120	.70	25.0
36x96	.70	24.0
36x120	.70	30.0
42x96	.55	28.0
42x120	.55	35.0
48x96	.55	32.0
48x120	.55	40.0
26 Ga. (.0179 in.)		
30x96	$0.95	15.0
30x120	.95	18.8
36x96	.95	18.0
36x120	.95	22.5
42x96	.85	21.0
42x120	.85	26.3
28 Ga. (.0149 in.)		
30x96	$1.05	12.5
30x120	1.05	15.6
36x96	1.05	15.0
36x120	1.05	18.8

22 Ga. and lighter, approx. 150 lbs. in a bdl.

GALVANIZED STEEL SHEETS



Special open hearth and rolling mill practice is followed in producing the base metal which is coated by passing through a bath of molten zinc. Controlled cooling conditions produce a clean, bright, uniform spangle of pleasing appearance.

Sheets are soft and adopted to mild forming operations. Most widely used of all coated sheets for long life and protection against rust.

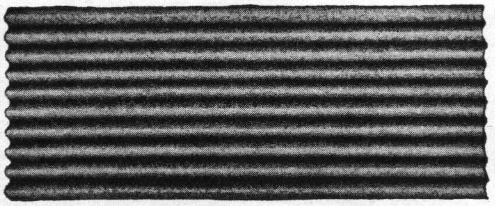
Net Extras for Size—Per 100 Pounds

Size, in.	Extra	Wt. sheet, lbs.
10 Gauge		
Wt. sq. ft. 5.781 lbs.		
30x96	Base	115.6
30x120	Base	144.5
36x96	Base	138.8
36x120	Base	173.4
42x96	.05	161.8
42x120	.05	202.3
48x96	.10	185.0
48x120	.10	231.2
12 Gauge		
Wt. sq. ft. 4.531 lbs.		
30x96	$0.10	90.6
30x120	.10	113.3
36x96	.10	108.8
36x120	.10	135.9
42x96	.15	126.8
42x120	.15	158.7
48x96	.20	145.0
48x120	.20	181.2
14 Gauge		
Wt. sq. ft. 3.281 lbs.		
30x96	$0.20	65.6
30x120	.20	82.0
36x96	.20	78.8
36x120	.20	98.4
42x96	.25	91.9
42x120	.25	114.8
48x96	.30	105.0
48x120	.30	131.2
16 Gauge		
Wt. sq. ft. 2.656 lbs.		
30x96	$0.40	53.1
30x120	.40	66.4
36x96	.40	63.8
36x120	.40	79.7
42x96	.45	74.4
42x120	.45	93.0
48x96	.50	85.0
48x120	.50	106.2
18 Gauge		
Wt. sq. ft. 2.156 lbs.		
30x96	$0.75	43.1
30x120	.75	53.9
36x96	.75	51.8
36x120	.75	64.7
42x96	.85	60.8
42x120	.85	75.5
48x96	.90	69.0
48x120	.90	86.2
20 Gauge		
Wt. sq. ft. 1.656 lbs.		
30x96	$1.00	33.1
30x120	1.00	41.4
36x96	1.00	39.8
36x120	1.00	49.7
42x96	1.15	46.0
42x120	1.15	58.0
48x96	1.20	53.0
48x120	1.20	66.2

Size, in.	Extra	Wt. sheet, lbs.
22 Gauge		
Wt. sq. ft. 1.406 lbs.		
30x96	$1.15	28.1
30x120	1.15	35.2
36x96	1.15	38.8
36x120	1.15	42.2
42x96	1.40	39.4
42x120	1.40	49.2
48x96	1.45	45.0
48x120	1.45	56.2
24 Gauge		
Wt. sq. ft. 1.156 lbs.		
24x96	$1.25	18.5
24x120	1.25	23.1
30x96	1.25	23.1
30x120	1.25	28.9
36x96	1.25	27.8
36x120	1.25	34.7
42x96	1.55	32.4
42x120	1.55	40.5
48x96	1.65	37.0
48x120	1.65	46.2
26 Gauge		
Wt. sq. ft. .906 lbs.		
24x96	$1.50	14.5
24x120	1.50	18.1
30x96	1.50	18.1
30x120	1.50	22.7
30x144	1.50	27.3
32x96	1.50	19.3
36x96	1.50	21.8
36x120	1.50	27.2
42x96	1.85	25.4
42x120	1.85	31.7
27 Gauge		
Wt. sq. ft. .843 lbs.		
24x96	$1.60	13.5
30x96	1.60	16.9
36x96	1.60	20.3
28 Gauge		
Wt. sq. ft. .781 lbs.		
24x96	$1.75	12.5
24x120	1.75	15.6
30x96	1.75	15.6
30x120	1.75	19.5
30x144	1.75	23.4
32x96	1.95	16.7
36x96	1.95	18.8
36x120	1.95	23.4
30 Gauge		
Wt. sq. ft. .656 lbs.		
24x96	$2.00	10.5
24x120	2.00	13.1
30x96	2.00	13.1
30x120	2.00	16.4
32x96	2.20	14.0
36x96	2.20	15.8
36x120	2.20	19.7

CORRUGATED STEEL ROOFING AND SIDING

GALVANIZED



26 in. Wide, 1¼ or 2½ in. Corrugations

Specify Size of Corrugations on Order

A square consists of 100 sq. ft. of sheet steel after corrugating but before laying, and does not include allowance for side and end laps.

Sheets 26 in. wide after corrugating, cover 24 in. to the weather when laid. End lap will vary with conditions.

Gauge and size in inches	Per square 1¼ in.	Per square 2½ in.	Wt. per square, lbs. 1¼ in.	Wt. per square, lbs. 2½ in.	Sheets per square	Sq. ft. in a sheet
No. 24x26x72	$22.50	$22.50	125	125	7.692	13.000
26x84	22.40	22.40	125	125	6.593	15.166
26x96	22.40	22.40	125	125	5.769	17.333
26x108	22.30	22.30	125	125	5.128	19.500
26x120	22.30	22.30	125	125	4.616	21.666
26x144	22.30	22.30	125	125	3.846	26.000
No. 26x26x72	19.40	19.40	98	98	7.692	13.000
26x84	19.20	19.20	98	98	6.593	15.166
26x96	19.20	19.20	98	98	5.769	17.333
26x108	19.00	19.00	98	98	5.128	19.500
26x120	19.00	19.00	98	98	4.616	21.666
26x144	19.00	19.00	98	98	3.846	26.000
No. 28x26x72	17.20	17.20	84	84	7.692	13.000
26x84	17.00	17.00	84	84	6.593	15.166
26x96	17.00	17.00	84	84	5.769	17.333
26x108	16.80	16.80	84	84	5.128	19.500
26x120	16.80	16.80	84	84	4.616	21.666
26x144	16.80	16.80	84	84	3.846	26.000

STANDARD ROOFING AND SIDING DATA

1¼ or 2½ in. Corrugations

One pound of nails (approximately 165—No. 10x1½ in. roofing nails) and one-half pound washers (approximately 304 lead washers) are required to lay one Square (100 square feet).

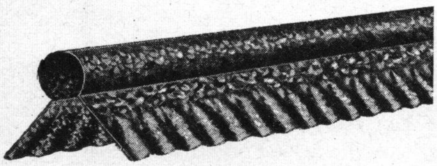
Safe Loads per Sheet

Supported at ends only; sheets 26 in. wide.

Span, ft.	1¼ in. Corrugations 28 ga.	1¼ in. Corrugations 26 ga.	1¼ in. Corrugations 24 ga.	2½ in. Corrugations 28 ga.	2½ in. Corrugations 26 ga.	2½ in. Corrugations 24 ga.
	Safe load, lbs.					
6	53	63	85	88	106	141
7	45	55	73	75	91	121
8	40	47	64	66	79	106
9	35	42	56	59	70	94
10	32	38	51	53	63	85

CORRUGATED RIDGE ROLL

GALVANIZED



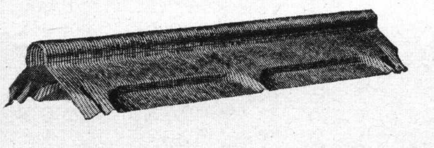
No. 28 Gauge
In 10 ft. Lengths

Corrugations, in.	1¼	2½
Girth, in.	14	14
Wt. per 100 ft., lbs.	90	90
Per 100 ft.	$28.00	28.00

100 ft. in a bundle.

3-V CRIMP RIDGE ROLL

GALVANIZED



Galvanized, in 28 in. Lengths

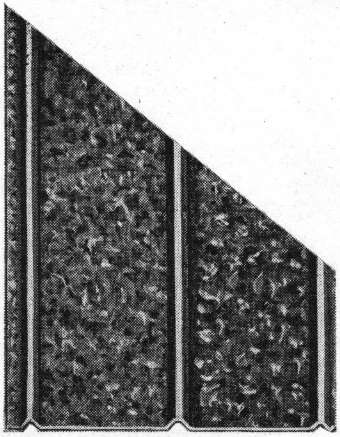
Per 100 feet

No. 28 Gauge—Adjustable, 16 in. girth wt. per 100 ft. 159 lbs. **$25.00**

Open stock.

3-V CRIMP STEEL ROOFING

GALVANIZED



3 V-crimp has a center V for greater strength. Nailing strips are not usually used under the center V, but for the best job should be used at the sides of the sheets.

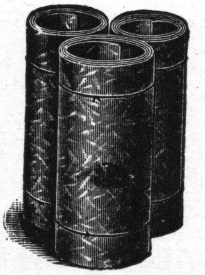
Made of special analysis open hearth steel found by many years of experience to be best for roofing and siding purposes.

Covering Width, 24 in.

Gauge and Size in inches	Per square	Wt. per square, lbs.	Wt. per sheet, lbs.	Sheets in a bundle
No. 24x24x60	$25.00	128	12.84	5
24x72	24.75	128	15.33	5
24x84	24.50	128	17.97	5
24x96	24.50	128	20.51	5
24x108	24.25	128	23.27	5
24x120	24.25	128	25.68	5
24x132	24.25	128	28.34	5
24x144	24.25	128	30.76	5
No. 26x24x60	23.00	100	10.05	10
24x72	22.75	100	12.04	10
24x84	22.50	100	14.06	10
24x96	22.50	100	16.05	10
24x108	22.25	100	18.05	10
24x120	22.25	100	20.10	10
24x132	22.25	100	22.22	10
24x144	22.25	100	24.08	10
No. 28x24x60	21.00	86	8.72	10
24x72	20.75	86	10.45	10
24x84	20.50	86	12.18	10
24x96	20.50	86	13.93	10
24x108	20.25	86	15.66	10
24x120	20.25	86	17.44	10
24x132	20.25	86	19.16	10
24x144	20.25	86	20.90	10

ROLL VALLEY

GALVANIZED



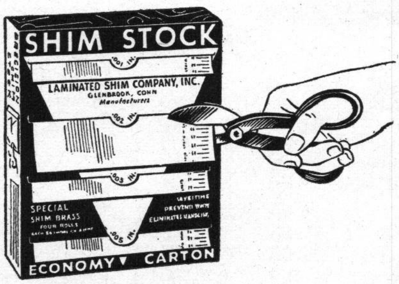
No. 28 Gauge

Width, in.	**10**	**14**	**20**
Wt. per roll, lbs.	33	46	67
Per roll	**$9.80**	**13.20**	**18.80**

50 lineal feet in a roll.

BRASS SHIM STOCK

SOLID



In Economy Dispensing Cartons

Compact, saves space and handling and prevents damage.

Each carton contains four rolls of brass shim stock, in the following thicknesses—.001, .002, .003 and .005 inch.

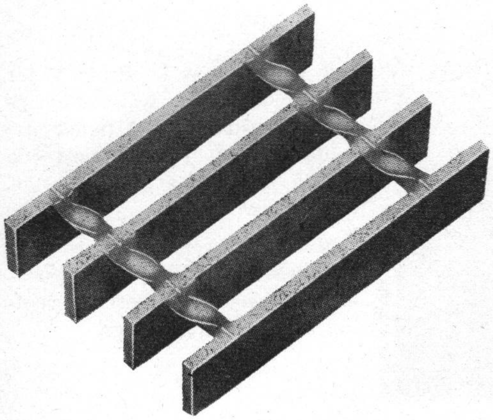
Per carton

No. 88—Four 6x50 in. rolls; wt. per carton 1.43 lbs. $4.80

One carton in a box.

STEEL GRATING

STANDARD, ELECTROFORGED



An Ideal Open Flooring for Any Industry

Possesses five unusual features:

1—One-piece, electroforged steel construction for maximum strength.
2—Easy maintenance; paint reaches entire surface.
3—Maximum open area for light and air.
4—Self-cleaning—no sharp corners to clog with dirt.
5—Economical and easy to install—Cut to fit your specifications.

When Ordering Always Specify:

1—Size of bars, Type number.
2—Whether to be painted or galvanized.
3—Complete dimensions of area to be covered.
4—Direction bearing bars are to run.
5—Is clearance to be allowed?

Maximum Width of Panel 24 in.

21 bearing bars per 24 in. of width. Openings 1 in. by 3.75 in. Standard cross bar spacing 4 in. center to center.

Table of Safe Loads

Safe Concentrated Load in pounds per foot of width.

Type Nos.	Size Bearing bars, in. 1 in. apart	Weight sq. ft., lbs.	Span, ft.												
			2	2½	3	3½	4	4½	5	5½	6	6½	7	8	9
8G21	¾x⅛	3.93	330	265	...	...	...	...	...	...	...	...	...	...	...
G21	¾x3/16	5.66	500	400	325	...	...	...	...	...	...	...	...	...	...
8J21	1 x⅛	5.10	600	480	400	330	...	...	...	...	...	...	...	...	...
J21	1 x3/16	7.34	900	725	600	500	450	...	...	...	...	...	...	...	...
8L21	1¼x⅛	6.26	950	750	630	530	465	415	...	...	...	...	...	...	...
L21	1¼x3/16	9.01	1425	1125	950	800	700	625	550	500	...	...	...	...	...
8N21	1½x⅛	7.42	1365	1100	915	785	680	600	550	500	...	...	...	...	...
N21	1½x3/16	10.68	2050	1650	1375	1175	1025	900	825	750	675	625	575	...	...
O21	1¾x3/16	12.36	2800	2225	1860	1600	1400	1225	1100	1000	925	850	800	700	600
P21	2 x3/16	14.03	3650	2925	2425	2100	1825	1625	1450	1325	1200	1125	1025	900	800
Q21	2¼x3/16	15.70	4650	3700	3100	2650	2300	2050	1850	1675	1550	1425	1325	1150	1025

Note—Maximum allowable fiber stress 16,000 pounds per square inch.

Odd Width Panels Supplied to Fill Out Necessary Dimensions

No. of bars	20	19	18	17	16	15	14	13	12	11
Width, in.	22 13/16	21⅝	20 7/16	19¼	18 1/16	16⅞	15 11/16	14½	13 5/16	12 1/16
No. of bars	10	9	8	7	6	5	4	3	2	
Width, in.	10⅞	9 11/16	8½	7 5/16	6⅛	4 15/16	3¾	2 9/16	1⅜	

Prices on Request

CARBON STEEL DRILL RODS

ROUND

Polished; In 3 Foot Lengths

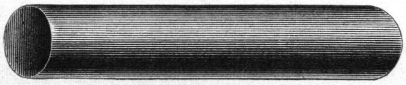
A high grade, economical steel drill rod for all around use. For all applications not demanding the use of tool steel yet requiring the size and finish of drill rods.

Size, in.	Price per pound	Wt. ft., lbs.	Size, in.	Price per pound	Wt. ft., lbs.	Size, in.	Price per pound	Wt. ft., lbs.	Size, in.	Price per pound	Wt. ft., lbs.	Size, in.	Price per pound	Wt. ft., lbs.
1/16	$2.25	.010	7/32	$0.75	.129	⅜	$0.60	.375	33/64	$0.55	.708	¾	$0.55	1.501
5/64	1.75	.016	15/64	.70	.147	25/64	.60	.408	17/32	.55	.753	25/32	.55	1.629
3/32	1.75	.020	¼	.65	.167	13/32	.60	.440	35/64	.55	.793	13/16	.55	1.762
7/64	1.45	.031	17/64	.65	.188	27/64	.60	.472	9/16	.55	.844	27/32	.55	1.900
⅛	1.30	.042	9/32	.65	.212	7/16	.60	.510	19/32	.55	.892	⅞	.55	2.043
9/64	1.15	.052	19/64	.65	.234	29/64	.60	.542	⅝	.55	1.042	29/32	.55	2.192
5/32	1.05	.066	5/16	.60	.261	15/32	.60	.583	21/32	.55	1.149	15/16	.55	2.345
11/64	1.05	.079	21/64	.60	.287	31/64	.60	.625	11/16	.55	1.261	31/32	.55	2.504
3/16	.85	.094	11/32	.60	.315	½	.55	.667	23/32	.55	1.379	1	.55	2.668
13/64	.80	.109	23/64	.60	.344									

COLD FINISHED STEEL

Standard Extra for Size—Net Per 100 Pounds

ROUNDS



AISI—B1112

Identification color, white.

Stocked in sizes 3/16 through 1⅞ in.

A high sulphur, free machining Bessemer steel. Recommended and generally used in the machining of all small sizes.

AISI—C1018

Identification color, green.

Stocked in sizes 1 15/16 through 5 in.

A low carbon, case hardening steel. Balancing manganese with the other elements in this steel results in greater homogeneity, density, and normality than is found in commercial quality. Machinability is also considerably improved.

Size, in.	Extra	Wt. per ft., lbs.	Stock lengths, ft.
3/16	$3.15	.094	12
7/32	3.15	.128	12
¼	2.15	.167	12
5/16	1.90	.261	12
11/32	1.90	.316	12
⅜	1.70	.376	12
7/16	1.60	.511	12
15/32	1.60	.587	12
½	1.50	.668	12
9/16	1.45	.845	12
19/32	1.45	.941	12
⅝	1.00	1.04	12 to 20
11/16	.85	1.26	12
¾	.85	1.50	12 to 20
13/16	.85	1.76	12
⅞	.85	2.04	12 to 20
15/16	.75	2.35	12 to 20
1	.75	2.67	12 to 20
1 1/16	.75	3.01	12 to 20
1⅛	.75	3.38	12 to 20
1 3/16	.75	3.77	12 to 20
1¼	.75	4.17	12 to 20
1 5/16	.75	4.60	12 to 20
1⅜	.75	5.05	12 to 20
1 7/16	.65	5.52	12 to 20
1½	.65	6.01	12 to 20
1 9/16	.65	6.52	12 to 20
1⅝	.65	7.05	12 to 20
1 11/16	.65	7.60	12 to 20
1¾	.65	8.18	12 to 20
1 13/16	.65	8.77	12 to 20
1⅞	.65	9.39	12 to 20
1 15/16	.75	10.02	12 to 20
2	.75	10.68	12 to 20
2 1/16	.75	11.36	12 to 20
2⅛	.75	12.06	12 to 20

(Continued)

COLD FINISHED STEEL

Standard Extras for Size—Net Per 100 Pounds

ROUNDS—CONTINUED

Size, in.	Extra	Wt. per ft., lbs.	Stock lengths, ft.
2 3/16	$0.75	12.78	12 to 20
2¼	.75	13.52	12 to 20
2 5/16	.75	14.28	12 to 20
2⅜	.75	15.06	12 to 20
2 7/16	.75	15.87	12 to 20
2½	.75	16.69	12 to 20
2 9/16	.75	17.63	12 to 20
2⅝	.75	18.40	12 to 20
2 11/16	.75	19.29	12 to 20
2¾	.75	20.20	12 to 20
2 13/16	.75	21.12	12 to 20
2⅞	.75	22.07	12 to 20
2 15/16	.85	23.04	12 to 20
3	.85	24.03	12 to 20
3 1/16	.95	25.05	12 to 20
3⅛	.95	26.08	12 to 20
3 3/16	.95	27.13	12 to 20
3¼	.95	28.26	12 to 20
3 5/16	.95	29.30	12 to 20
3⅜	.95	30.42	12 to 20
3 7/16	1.05	31.55	12 to 20
3½	1.05	32.71	12 to 20
3 9/16	1.05	33.89	12 to 20
3⅝	1.05	35.09	12 to 20
3 11/16	1.05	36.31	12 to 20
3¾	1.05	37.55	12 to 20
3 13/16	1.20	38.81	12 to 20
3⅞	1.20	40.10	12 to 20
3 15/16	1.20	41.40	12 to 20
4	1.20	42.73	12 to 20
4 1/16	1.20	44.07	12 to 20
4⅛	1.20	45.44	12 to 20
4 3/16	1.30	46.83	12 to 20
4¼	1.30	48.23	12 to 20
4 5/16	1.30	49.66	12 to 20
4⅜	1.30	51.11	12 to 20
4 7/16	1.40	52.58	12 to 20
4½	1.40	54.08	12 to 20
4 9/16	1.40	55.59	12 to 20
4⅝	1.40	57.12	12 to 20
4 11/16	1.40	58.68	12 to 20
4¾	1.40	60.25	12 to 20
4⅞	1.40	63.46	12 to 20
4 15/16	1.50	65.10	12 to 20
5	1.50	66.76	12 to 20

STANDARD MANUFACTURING TOLERANCES

Cold Finished Rounds

Size, in.	.28% Carbon or less	Over .28% to .55% Carbon
1 or under	—.002	—.003
Over 1 to 2 incl.	—.003	—.004
Over 2 to 4 incl.	—.004	—.005
Over 4 to 6 incl.	—.005	—.006
Over 6 to 7¾ incl.	—.006	—.008

COLD FINISHED STEEL

Standard Extras for Size—Net Per 100 Pounds

HEXAGONS
AISI—B1112

Identification color, white.

Size, in.	Extra	Wt. per ft., lbs.	Stock lengths, ft.
⅛	$8.25	0.046	12
3/16	5.75	0.104	12
¼	4.00	0.184	12
5/16	2.95	0.288	12
11/32	2.95	0.348	12
⅜	2.25	0.414	12
7/16	1.85	0.564	12
½	1.50	0.736	12
9/16	1.30	0.932	12
⅝	1.30	1.15	12
11/16	1.00	1.39	12
¾	1.00	1.66	12
⅞	1.00	2.25	12
1	.90	2.94	12
1⅛	.90	3.77	12
1¼	.90	4.60	12
1⅜	.90	5.57	12
1½	1.00	6.63	12
1¾	1.00	9.02	12
1⅞	1.00	10.35	12
2	1.25	11.78	12

STRESSPROOF
Heat Treated

Strength:	Minimum yield point:
⅜-2 in.	100,000 psi
2⅛ in. and larger	90,000 psi

Machineability:
76% of Bessemer B1112
Approx. 125 S.F.P.M.
Wearability: excellent
Warpage: Minimum

All properties of Stressproof are right in the bar as shipped. You need only machine the part. This makes it the ideal steel for maintenance as well as production parts.

Replaces Carbon and Alloy Steels

Stressproof has replaced a variety of steels including Heat Treated 3135, 3140, 4140, 8640, 1045, and 1137, and Carburized 1117, 1118, 1018, 1019, 4615 and 8620.

Typical Stressproof Applications

- Axles
- Collets
- Gears
- Lead and feed screws
- Pins and pinions
- Piston rods
- Screws
- Shafts
- Spindles
- Studs and bolts
- Worms

ROUNDS

Standard Extras for Size—Net Per 100 Pounds

12 ft. stock lengths.

Size, in.	Extra	Wt. per ft., lbs.	Size, in.	Extra	Wt. per ft., lbs.
7/16	$1.60	.511	1 7/16	$0.65	5.518
½	1.50	.668	1½	.65	6.008
⅝	1.00	1.043	1⅝	.65	7.051
¾	.85	1.502	1¾	.65	8.178
⅞	.85	2.044	1⅞	.65	9.388
1	.75	2.670	1 15/16	.75	10.02
1⅛	.75	3.380	2	.75	10.68
1 3/16	.75	3.766	2 7/16	.75	15.88
1¼	.75	4.172	2 11/16	.75	16.86
1⅜	.75	5.049	2 15/16	.85	23.04

HIGH SPEED STEEL BARS

REX AA

Carbon .73; Chromium 4.00; Vanadium 1.10; Tugsten 18.00

A standard, general purpose, high speed steel. It has a wide hardening range. This steel is less susceptible to soft skin during hardening than other types and has good redness and toughness values.

Typical Applications

- Boring tools
- Broaches
- Cutters
- End Mills
- Rear cutters
- Hobs
- Milling cutters
- Punches, hot and cold
- Reamers
- Taps
- Twist drills
- Woodworking knives.

Net Extras for Size—Per Pound

Size, in.	Extra	Wt. ft., lbs.	Size, in.	Extra	Wt. ft., lbs.	Size, in.	Extra	Wt. ft., lbs.
				Rounds				
¼	$0.12½	.183	1¼	$0.02	4.589	3⅛	$0.07½	28.68
5/16	.10½	.287	1½	Base	6.608	3¼	.07½	31.03
⅜	.06½	.143	1¾	Base	8.995	3½	.07½	35.98
½	.04½	.734	1⅞	Base	10.32	4	.07½	47.00
⅝	.03	1.147	2	Base	11.74	4¼	.07½	53.05
¾	.03	1.652	2¼	Base	14.87	4½	.07½	59.48
⅞	.03	2.249	2½	.03	18.35	4¾	.07½	66.27
1	.02	2.937	2¾	.03	22.20	5	.07½	73.43
1⅛	.02	2.718	3	.03	26.43			
				Squares				
½	$0.08	.934	1	$0.05	3.73	1¼	$0.05	5.8444
¾	.06½	2.104						
				Flats				
1 x¼	$0.11	.934	1 x⅝	$0.05	2.33	2 x¾	$0.03	5.61
1 x5/16	.09	1.16	1¼x⅝	.05	2.91	1½x1	.03	5.61
1½x⅜	.08	2.11	1½x⅝	.05	3.50	2 x1	.03	7.48
1 x½	.06½	1.87	1 x¾	.05	2.80	3 x1	.03	11.22
2 x½	.05	3.74	1½x¾	.03	4.21	2 x1½	.03	11.22

TOOL STEEL BARS

BLACK DIAMOND STANDARD CARBON

Carbon as Desired; Manganese 0.25%; Silicon 0.25%

Black Diamond Standard is a good quality electric furnace melted, water hardening carbon tool steel. Has earned an excellent reputation for use as the standard in general shop tools requiring extreme toughness and resistance to shock and impact.

May be secured in various carbon ranges but the Standard is 0.090 to 1.00% carbon.

Typical Applications

- Blacksmith tools
- Chisels
- Drills
- Hammers
- Picks
- Pins
- Punches
- Quarry tools
- Sledges

Net Extras for Size—Per Pound

Size, in.	Extra	Wt. ft., lbs.	Size, in.	Extra	Wt. ft., lbs.	Size, in.	Extra	Wt. ft., lbs.
				Rounds				
⅜	$0.05	.376	1	$0.02	2.670	1⅝	$Base	7.051
½	.04	.668	1⅛	.02	3.380	1¾	Base	8.178
⅝	.02½	1.043	1¼	.02	4.172	2	Base	10.68
¾	.02½	1.502	1⅜	.02	5.049	2½	Base	16.69
⅞	.02½	2.045	1½	Base	6.008	3	Base	24.03
				Flats				
1 x½	$0.04	1.70	1 x¾	$0.03	2.55	1½x1	$0.02	5.10
2 x½	.03	3.40	1¼x¾	.03	3.19	2 x1	.02	6.80
1 x⅝	.03	2.12	1½x¾	.02	3.83	3 x1	.02	10.20
1¼x⅝	.03	2.65	2 x¾	.02	5.10	4 x1	.04	13.60
1½x⅝	.03	3.19						
				Squares				
¼	$0.30½	.213	⅝	$0.05	1.328	1½	$0.02	7.650
5/16	.18½	.332	¾	.04	1.913	1¾	.02	10.41
⅜	.10	.478	⅞	.03	2.603	2	.02	13.60
7/16	.05	.651	1	.03	3.400	2¼	.02	17.21
½	.05	.850	1¼	.03	5.313	2½	.02	21.25
				Hexagons				
¼	$0.08	.184	⅝	$0.02½	1.150	1	$0.02	2.945
⅜	.05	.414	¾	.02½	1.656	1⅛	.02	3.727
7/16	.05	.564	⅞	.02½	2.254	1¼	.02	4.601
½	.04	.736						
				Octagons				
¼	$0.08	.176	½	$0.04	.705	1	$0.02	2.820
5/16	.06½	.275	⅝	.02½	1.102	1⅛	.02	3.569
⅜	.05	.397	¾	.02½	1.586	1¼	.02	4.407
7/16	.05	.540	⅞	.02½	2.159	1½	Base	6.345

TOOL STEEL BARS

"LA BELLE" SELFTEMPERING

A tough, uniform hardening alloy tool steel that can be forged at any red (lemon) heat without danger of burning or bursting. All bars harden uniformly from a wide range (1550°-1800° F.) by simply quenching in water—no "draw" or tempering is necessary.

These features adapt it especially to hand tools and general field service application Can be worked successfully by anyone.

Typical Applications

- Blacksmith tools
- Bucket teeth
- Casing rippers
- Caulking tools
- Chisels
- Cold cutters
- Crow bars
- Diamond points
- Digger teeth
- Drift pins
- Gougers
- Pick points
- Punches
- Shovel teeth
- Track tools
- Wedges

Net Extras for Size—Per Pound

Octagon

Size, in.	Extra	Wt. ft., lbs.	Size, in.	Extra	Wt. ft., lbs.	Size, in.	Extra	Wt. ft., lbs.
⅜	$0.05	.397	⅝	$0.02½	1.102	⅞	$0.02½	2.159
½	.04	.705	¾	.02½	1.586	1	.02	2.820

MACHINERY STEEL BARS

MAX-EL 2B, HOT ROLLED

Carbon 0.40%; Manganese 1.00%; Phosphorous 0.05%; Sulphur 0.08%; Molybdenum 0.10%

Averages .40 carbon. Generally used in the "as rolled" condition, for application where heat treatment is not intended but where strength and good machinability are important.

Typical Applications

- Motor shafts
- Armature shafts
- Turbine shafts
- Centrifugal pump shafts
- Mine car axles
- Flame hardened parts
- Welded shanks, on H.S. Twist drills

Rounds

Size, in.	Wt. ft., lbs.	Size, in.	Wt. ft., lbs.	Size, in.	Wt. ft., lbs.	Size, in.	Wt. ft., lbs.
½	.668	1¾	8.178	3¼	28.21	5¼	73.60
⅝	1.043	1⅞	9.388	3⅜	30.42	5½	80.78
¾	1.502	2	10.68	3½	32.71	5¾	84.49
⅞	2.045	2¼	13.52	3¾	37.55	6	96.13
1	2.670	2⅜	15.06	3⅞	40.10	6¼	104.3
1⅛	3.380	2½	16.69	4	42.73	6½	112.8
1¼	4.172	2⅝	18.40	4¼	48.23	6¾	121.7
1⅜	5.049	2¾	20.19	4½	54.08	7	130.9
1½	6.008	2⅞	22.07	4¾	60.25	7½	150.2
1⅝	7.051	3	24.03	5	66.76	8	170.9

Prices on Request

MAX-EL 3½ ALLOY, HEAT-TREATED, HOT ROLLED

Carbon 0.50%; Manganese 1.25%; Sulphur 0.08%; Chromium 0.65%; Molybdenum 0.18%

A remarkable deep hardening alloy steel, particularly adapted for service applications where substantial strength, toughness and hardness are required. Machines in the heat treated condition at hardness as high as 300 Brinell.

Typical Applications

- Transportation Equipment
  - Drive shafts
  - Jack shafts
  - Motor studs
- Excavating and Road Machinery
  - Heavy duty shafts
  - Gears
  - Ditch digger teeth
  - Caterpillar treads, links, pins
- Feed Mills or Grain Crushers
  - Hammers, shafts
- Cement Mill Equipment
  - Kiln gear shafts
  - Quarry car axles
  - Pinion shafts
- Logging tools
- Mine car axles

Size, in.	Wt. ft., lbs.	Size, in.	Wt. ft., lbs.	Size, in.	Wt. ft., lbs.	Size, in.	Wt. ft., lbs.
			Rounds				
½	.668	1¾	8.178	3¼	28.21	5	66.76
⅝	1.043	1⅞	9.388	3⅜	30.42	5¼	73.60
¾	1.502	2	10.68	3½	32.71	5½	80.78
⅞	2.045	2⅛	12.06	3⅝	35.09	5¾	88.29
1	2.670	2¼	13.52	3¾	37.55	6	96.13
1⅛	3.380	2½	16.69	4	42.73	6¼	104.3
1¼	4.172	2⅝	18.40	4¼	48.23	6½	112.8
1⅜	5.049	2¾	20.19	4½	54.08	7	130.9
1½	6.008	3	24.03	4¾	60.25	7½	150.2
1⅝	7.051					8	170.9
			Squares				
1¼	5.313	1¾	10.41	2¼	17.21	3	30.60
1½	7.650	2	13.60	2½	21.25	4	42.73

Prices on Request

MACHINERY STEEL

SIMPLEX FORGING, HEAT TREATED, PICKLED AND HOT ROLLED

A 3140 Alloy Steel

Carbon 0.38/0.43%; Sulphur 0.04% max.; Manganese 0.70/0.90%; Silicon 0.20/0.35%; Chromium 0.55/0.75%; Phosphorus 0.04% max.; Nickel 1.10/1.40%.

A medium carbon alloy steel. Responds readily to heat treatments. May be hardened by water quenching except in complicated shapes when it is advisable to employ either an interrupted water quench or an oil hardening treatment.

Typical Applications

Axle shafts
Centrifugal pump sleeves
Power shovel parts
Spline shafts
Stressed bolts
Studs and screws

Rounds

Size, in.	Wt. ft., lbs.	Size, in.	Wt. ft., lbs.	Size, in.	Wt. ft., lbs.	Size, in.	Wt. ft., lbs.
⅜	.376	1¾	8.178	4	42.73	6	96.13
½	.668	2	10.68	4¼	48.28	6¼	104.3
⅝	1.043	2¼	13.52	4½	54.08	6½	112.8
¾	1.502	2½	16.69	4¾	60.25	6¾	121.7
⅞	2.045	2¾	20.19	5	66.76	7	130.9
1	2.670	3	24.03	5¼	73.60	7¼	140.4
1¼	4.172	3¼	28.21	5½	80.78	7½	150.2
1½	6.008	3½	32.71	5¾	88.29	8	170.9
1⅝	7.051	3¾	37.55				

Prices on Request

SPRING STEEL BARS

ONYX

Natural

One of the highest grades of spring steel, running low in phosphorus and sulphur.

Rounds

Size, in.	Wt. ft., lbs.	Size, in.	Wt. ft., lbs.	Size, in.	Wt. ft., lbs.	Size, in.	Wt. ft., lbs.
3/16	.094	⅜	.376	⅝	1.043	⅞	2.045
¼	.167	7/16	.511	¾	1.502	1	2.670
5/16	.261	½	.668				

Flats

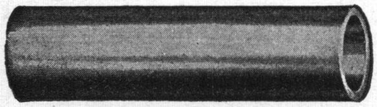
½x1/16	.1060	1¼x⅛	.5312	1¾x¼	1.49	3 x5/16	3.19
¾x1/16	.1594	1¼x⅛	.638	2 x¼	1.70	1¾x⅜	2.23
1 x1/16	.212	2 x⅛	.850	2½x¼	2.12	2 x⅜	2.55
1¼x1/16	.2656	1 x3/16	.638	3 x¼	2.55	2¼x⅜	2.87
1½x1/16	.319	1½x3/16	.957	4 x¼	3.40	2½x⅜	3.19
2 x1/16	.425	1¾x3/16	1.15	1 x5/16	1.06	3 x⅜	3.83
½x⅛	.2125	2 x3/16	1.28	1¾x5/16	1.86	3½x⅜	4.47
⅝x⅛	.2656	1 x¼	.850	2 x5/16	2.12	3 x7/16	4.46
¾x⅛	.3188	1¼x¼	1.06	2¼x5/16	2.39	3½x7/16	5.20
1 x⅛	.425	1½x¼	1.28	2½x5/16	2.65	4 x½	5.95

Prices on Request

STEEL MECHANICAL TUBING

SEAMLESS

Cold Drawn, Low Carbon



The use of tubing for making hollow cylindrical parts is usually more economical than the use of bar stock for such purposes.

In many cases tubing can be used just as it comes from the mill, with possibly a light finishing cut or grinding operation. The wide range of sizes and wall thickness and numerous grades and treatments of steel available make it possible to select seamless tubing of just the right dimensions and physical properties for the intended purpose.

Seamless Mechanical Tubing is adaptable to varied treatment by expansion cupping, tapering, swaging, flanging, coiling, and similar manipulations, and is readily welded to other parts.

For an endless number and variety of mechanical uses where both economy in production and accuracy in finished parts are essential requirements, manufacturers, machinists, and tool builders have found many practical advantages in using mechanical tubing.

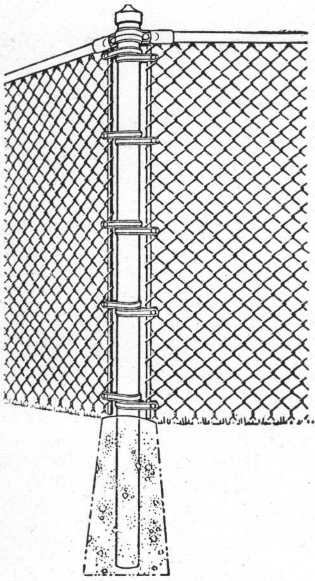
20 Foot Lengths

Wall Thickness B.W. ga.	Wall Thickness Dec., in.	ID, in.	Wt. per ft. lbs.
⅜ in. OD			
20	.035	.305	.127
18	.049	.277	.171
16	.065	.245	.215
14	.083	.209	.259
13	.095	.185	.284
11	.120	.135	.327
7/16 in. OD			
20	.035	.367	.151
18	.049	.340	.204
16	.065	.307	.259
14	.083	.272	.315
13	.095	.247	.348
11	.120	.197	.408
½ in. OD			
20	.035	.430	.174
18	.049	.402	.236
16	.065	.370	.302
14	.083	.334	.370
13	.095	.310	.411
11	.120	.260	.487
⅝ in. OD			
20	.035	.555	.221
18	.049	.527	.301
16	.065	.495	.389
14	.083	.459	.481
13	.095	.435	.538
11	.120	.385	.647
¾ in. OD			
20	.035	.680	.267
18	.049	.652	.367
16	.065	.620	.476
14	.083	.584	.591
13	.095	.560	.665
11	.120	.510	.807
3/16	.188	.375	1.13
⅞ in. OD			
20	.035	.805	.314
18	.049	.777	.432
⅞ in. OD—Cont'd			
16	.065	.745	.562
14	.083	.709	.702
13	.095	.685	.791
11	.120	.635	.968
1 in. OD			
20	.035	.930	.361
18	.049	.902	.498
16	.065	.870	.649
14	.083	.834	.813
13	.095	.810	.918
11	.120	.760	1.13
3/16	.188	.625	1.63
¼	.250	.500	2.00
5/16	.313	.375	2.30
1⅛ in. OD			
¼	.250	.625	2.37
5/16	.313	.500	2.71
1¼ in. OD			
20	.035	1.180	.454
18	.049	1.152	.629
16	.065	1.120	.823
14	.083	1.084	1.03
13	.095	1.06	1.17
11	.120	1.01	1.45
3/16	.188	.875	2.13
¼	.250	.750	2.67
5/16	.313	.625	3.13
1⅜ in. OD			
¼	.250	.875	3.00
5/16	.313	.750	3.55
1½ in. OD			
20	.035	1.43	.548
18	.049	1.40	.759
16	.065	1.37	.996
14	.083	1.33	1.26
13	.095	1.31	1.43
11	.120	1.26	1.77
3/16	.188	1.13	2.63
1½ in. OD—Cont'd			
¼	.250	1.00	3.34
5/16	.313	.875	3.97
⅜	.375	.750	4.51
½	.500	.500	5.34
1⅝ in. OD			
¼	.250	1.13	3.67
5/16	.313	1.00	4.39
1¾ in. OD			
3/16	.188	1.38	3.14
¼	.250	1.25	4.00
5/16	.313	1.13	4.80
⅜	.375	1.00	5.51
½	.500	.750	6.68
1⅞ in. OD			
¼	.250	1.38	4.34
5/16	.313	1.25	5.22
2 in. OD			
20	.035	1.93	.735
18	.049	1.90	1.02
16	.065	1.87	1.34
14	.083	1.83	1.70
13	.095	1.81	1.93
11	.120	1.76	2.41
3/16	.188	1.63	3.64
¼	.250	1.50	4.67
5/16	.313	1.38	5.64
⅜	.375	1.25	6.57
½	.500	1.00	8.01
2¼ in. OD			
16	.065	2.12	1.52
14	.083	2.08	1.92
13	.095	2.06	2.19
11	.120	2.01	2.73
¼	.250	1.75	5.34
5/16	.313	1.63	6.48
⅜	.375	1.50	7.51
½	.500	1.25	9.35
2½ in. OD			
16	.065	2.37	1.69
14	.083	2.33	2.14
13	.095	2.31	2.44
11	.120	2.26	3.05
3/16	.188	2.13	4.64
¼	.250	2.00	6.01
5/16	.313	1.88	7.31
⅜	.375	1.75	8.51
½	.500	1.50	10.68
2¾ in. OD			
16	.065	2.62	1.86
14	.083	2.58	2.36
13	.095	2.56	2.69
11	.120	2.51	3.37
¼	.250	2.25	6.68
5/16	.313	2.13	8.15
⅜	.375	2.00	9.51
½	.500	1.75	12.02
3 in. OD			
16	.065	2.87	2.04
14	.083	2.83	2.59
13	.095	2.81	2.95
11	.120	2.76	3.69
3/16	.188	2.63	5.65
¼	.250	2.50	7.34
5/16	.313	2.38	8.98
⅜	.375	2.25	10.51
½	.500	2.00	13.35
3½ in. OD			
16	.065	3.37	2.39
14	.083	3.33	3.03
13	.095	3.31	3.46
11	.120	3.26	4.33
¼	.250	3.00	8.68
5/16	.313	2.88	10.65
⅜	.375	2.75	12.52
½	.500	2.50	16.02
3¾ in. OD			
⅜	.375	3.00	13.52
½	.500	2.75	17.36
4 in. OD			
16	.065	3.87	2.73
14	.083	3.83	3.47
13	.095	3.81	3.96
11	.120	3.76	4.97
¼	.250	3.50	10.01
5/16	.313	3.38	12.33
⅜	.375	3.13	14.02
½	.500	3.00	18.69
⅝	.625	2.75	22.53
¾	.750	2.50	26.03
4½ in. OD			
¼	.250	4.00	11.35
5/16	.313	3.88	14.00
⅜	.375	3.75	16.52
½	.500	3.50	21.36
5 in. OD			
¼	.250	4.50	12.68
5/16	.313	4.38	15.67
⅜	.375	4.25	18.52
½	.500	4.00	24.03
⅝	.625	3.75	29.20
¾	.750	3.50	34.04
5½ in. OD			
¼	.250	5.00	14.02
5/16	.313	4.88	17.34
⅜	.375	4.75	20.53
½	.500	4.50	26.70
6 in. OD			
¼	.250	5.50	15.35
5/16	.313	5.38	19.00
⅜	.375	5.25	22.53
½	.500	5.00	29.37
⅝	.625	4.75	35.88
¾	.750	4.50	42.05

Prices on Request

CHAIN LINK FENCE

NON-CLIMBABLE



Light Construction

For heights to 6 ft. 2 in. Mesh fabric, No. 9 or No. 6 gauge. Line posts 2 in. OD tubular or 1.875x1.5 in. H section; end and corner posts 2½ in. OD pipe; top rail 1⅝ in. OD tubular.

Chain link non-climbable fence is the ideal protection for industrial, institutional or residential property against arson, theft, vandalism, trespassing and other costly hazards.

The fabric is woven with carefully selected open hearth steel wire. Galvanized after weaving by the hot dip process, insuring a heavy, uniform coating over its entire surface.

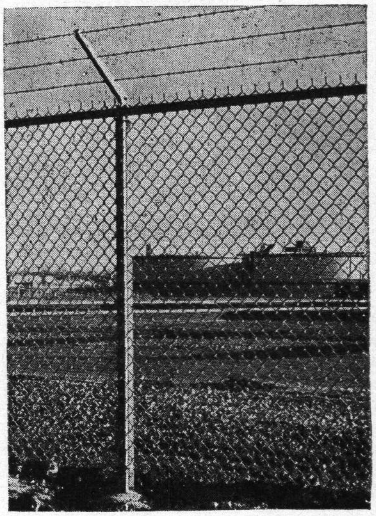
Terminal and line posts are constructed of full weight tubular steel or H structural sections. Top rails are of tubular pipe. Gate frames are full weight tubular steel. Fittings are of malleable iron, steel or aluminum. All of these components are designed for maximum strength and all but aluminum are thoroughly galvanized by the hot dip process.

Double and single drive gates, slide gates and walk gates are available to meet each individual need.

While we illustrate and describe only two standard constructions, others are available in a wide range of variations for every requirement.

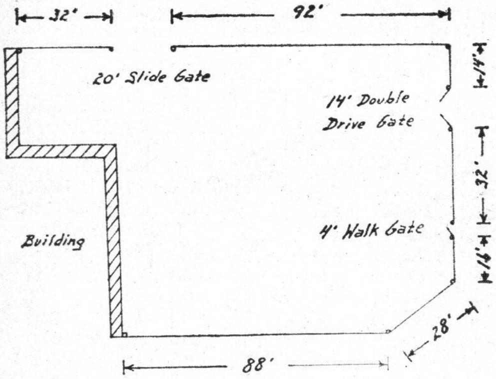
Quotations may be had for fabric only or fabric and erection.

Write Us For Prices,
Descriptive Literature and
Detailed Information



Heavy Construction

For heights to 12 ft. 2 in. Mesh fabric, No. 9 or No. 6 gauge. Line posts 2½ in. OD tubular or 2.25x1.95 in. H section; end and corner posts 3 in. OD pipe; top rail 1⅝ in. OD tubular.



How to Order or Request an Estimate

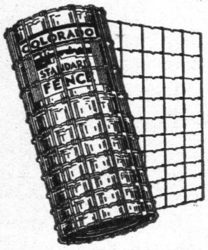
The following information is necessary for an accurate quotation.

1—The number of fence desired.
2—Over all height of fence, including heights of barbed wire applicable.
3—Type of top rail desired.
4—Gauge of wire and size of mesh where choice is given.
5—A sketch showing:
  a. Length of each section of fence.
  b. Width of opening of each gate and direction of opening.
  c. Position of trees, curbs, marshy land, buildings, etc., that may affect erections.
  d. Corner gate and end posts needed. (Pull posts are needed wherever an abrupt change of slope occurs and should be shown as terminal posts.)
6—A detailed description of all obstacles, and general soil conditions to a depth of 36 in., if abnormal.
7—A list of gates, single and double, with widths of opening, bottom clearance; height of clearance on slide gates.
8—Barbed or knuckled selvage if other than standard.
9—Describe type of property to be enclosed; home, storage yard, industrial plant, etc.
10—List any additional requirements.

FIELD FENCE

STANDARD, 11 GAUGE

Galvanized



A general purpose stock and field fence of exceptional strength for confining horses, mules and large cattle. Tight at the bottom for holding hogs and sheep. Made from copper-bearing steel wire.

Spacing—Lowest space 3 in., next 3½, 4, 4½, 5, 5½ and 6 in. apart.

Specifications—Top and bottom wires No. 9, intermediate and stay wires No. 11.

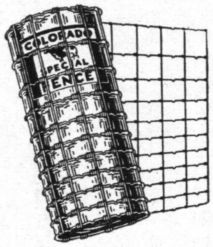
Stay Wires 6 Inches Apart

Nos.	726	832
Height, in.	26	32
No. of bars	7	8
Wt. per roll, lbs.	184	214
Per roll	$29.10	33.85

Twenty rods in a roll.

SPECIAL, 12½ GAUGE

Galvanized



The most popular field fence. Made of copper-bearing steel wires. It is a very good hog and cattle fence and adapted for purposes where greatest strength is not essential.

Use No. 832 for wolves and hogs.

Spacing—Lowest space 3 in., next 3½, 4, 4½, 5, 5½, 6, 7 and 8 in. apart.

Specifications—Top and bottom wires No. 10, intermediate and stay wires No. 12½.

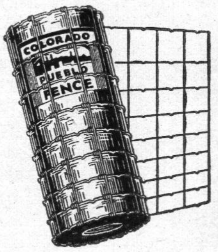
Stay Wires 6 Inches Apart

Nos.	726	832	939	1047
Height, in.	26	32	39	47
No. of bars	7	8	9	10
Wt. per roll, lbs.	128	148	168	190
Per roll	$20.55	23.70	27.00	30.45

Twenty rods in a roll.

LIGHT, 14½ GAUGE

Galvanized



A light weight fence in which all of the good features and quality of the heavier patterns are retained. Especially designed for confining sheep, goats and hogs. Made from copper-bearing steel wire.

Spacing—Lowest space 3 in., next 3½, 4, 4½, 5, 5½ and 6 in. apart.

Specifications—Top and bottom wires No. 11, intermediate and stay wires No. 14½.

Stay Wires 6 Inches Apart

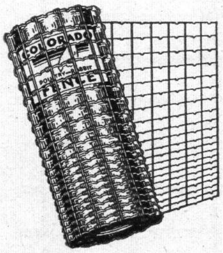
Nos.	726	832
Height, in.	26	32
No. of bars	7	8
Wt. per roll, lbs.	86	98
Per roll	$14.80	16.90

Twenty rods in a roll.

POULTRY AND RABBIT FENCE

14½ GAUGE

Galvanized



The correct fence for confining all kinds of poultry and for protecting crops, orchards and gardens in rabbit infested districts.

The mesh is close enough to prevent poultry and rabbits from squeezing through. Made from copper-bearing steel wire.

Spacing—Lowest 4 spaces 1½ in., next 5 spaces 2 in., next 2½, 2½, 3, 3½, 4, 4, 4½, 4½, 5 and 5 in. apart.

Specifications—Top and bottom wires No. 11, intermediate and stay wires No. 14½.

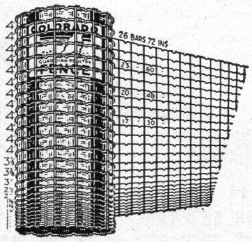
Stay Wires 6 Inches Apart

Nos.	**1948**	**2158**
Height, in.	48	58
No. of bars	19	21
Wt. per roll, lbs.	93	104
Per roll	$15.90	17.80

Ten rods in a roll.

POULTRY FENCE

14½ GAUGE



Adaptable for confining all kinds of large fowl and for excluding rabbits. It is supported by strong top and bottom wires and is easy to erect. Made of copper-bearing steel wire.

Spacing—Lowest 5 spaces 1 in., next 1¼, 1⅜, 1⅝, 2, 2½, 3, 3⅜ and 3⅞ in., balance 4 in. apart.

Specifications—Top and bottom wires No. 11, intermediate and stay wires No. 14½.

Stay Wires 6 Inches Apart

Nos.	**2048**	**2360**
Height, in.	48	60
No. of bars	20	23
Wt. per roll, lbs.	95	109
Per roll	$16.35	18.80

Ten rods in a roll.

15½ GAUGE

Galvanized

Made of copper-bearing steel wire.

Spacing—Lowest 5 spaces 1 in., next 1¼, 1⅜, 1⅝, 2, 2½, 3, 3⅜ and 3⅞ in., balance 4 in. apart.

Specifications—Top and bottom wires No. 12½, intermediate and stay wires No. 15½.

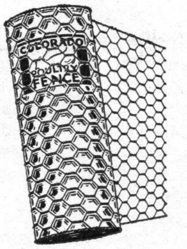
Stay Wires 6 Inches Apart

Nos.	**2048**	**2360**
Height, in.	48	60
No. of bars	20	23
Wt. per roll, lbs.	68	79
Per roll	$13.20	15.35

Ten rods in a roll.

POULTRY NETTING

HEXAGON



Galvanized Before Weaving

Fabricated and galvanized by the latest improved process of copper bearing steel wire.

1 in. Mesh, No. 20 Gauge Wire

Width, in.	Per roll	Sq. ft. in a roll	Wt. per roll, lbs.
12	$ 4.45	150	17
18	7.15	225	24
24	8.85	300	30
36	12.85	450	43
48	16.80	600	56
60	20.80	750	71
72	25.10	900	85

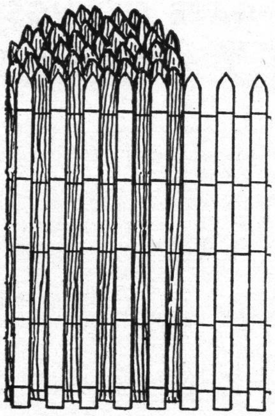
2 in. Mesh, No. 20 Gauge Wire

Width, in.	Per roll	Sq. ft. in a roll	Wt. per roll, lbs.
24	$ 4.65	300	17
36	6.65	450	24
48	8.90	600	31
60	10.50	750	37
72	12.40	900	44

150 lineal feet in a roll.

PICKET SNOW FENCE

POINTED TOP



Conforms to Colorado Highway Specifications

Each picket is constructed of quality wood treated with a preservative paint.

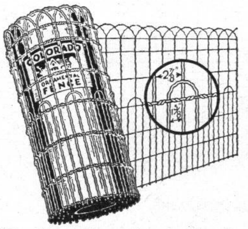
Pickets are spaced on 3½ in. centers between 5 cables of 2 strands each of No. 12 gauge galvanized steel wire.

	Per roll
Snow Fence—Pickets ½ in. thick, 1½ in. wide, 4 ft. high; wt. per roll 150 lbs.	**$15.00**

Fifty feet in a roll.

LAWN FENCE

ORNAMENTAL



Double Loop Galvanized

A strong, durable and attractive ornamental lawn fence, closely woven and difficult to climb. Made of copper-bearing steel wire. The hard springy steel pickets help to prevent the fence from sagging and otherwise losing its shape.

Specification A—9½ Gauge

Pickets or stay wires No. 9½ gauge, spaced 2⅞ in. apart at top and 1⅜ in. apart at bottom. Horizontal cables made up of two No. 13 gauge wires twisted together, spaced 6 inches apart except the two top cables which are spaced 2¾ in. apart.

Height, in.	**36**	**42**	**48**
Wt. per roll, lbs.	231	258	300
Per roll	$34.80	39.55	44.35

150 lineal feet in a roll.

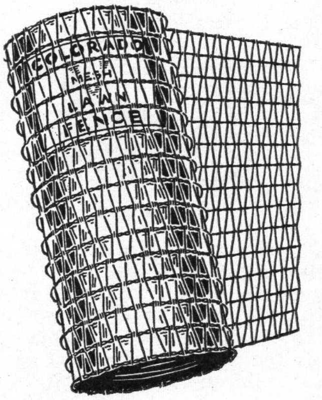
Specification A-11—11 Gauge

Pickets or stay wires No. 11 gauge, otherwise same as above.

Height, in.	**36**	**42**	**48**
Wt. per roll, lbs.	188	210	240
Per roll	$29.60	33.55	39.50

150 lineal feet in a roll.

V-MESH



Galvanized

The strongest construction known in fence building, no cut wires, no knots. Cross wires are interwoven with horizontal wires making a one-piece fabric. Copper-bearing wire.

Specification F-1—4x4 Mesh

Horizontal wires No. 12½, cross wires No. 14.

Recommended for corrals, orchards, school yards and cemeteries. Meets Colorado State Highway specifications.

Height, in.	**34**
Wt. per roll, lbs.	127
Per roll	$25.70

Ten rods in a roll.

Specification I-2—2x4 Mesh

Horizontal wires No. 12½, cross wires No. 14.

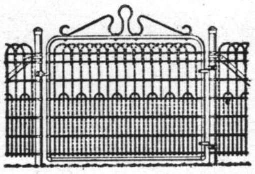
Non-climbable, recommended for parks, school yards and cemeteries.

Height, in.	**34**	**42**	**50**	**58**
Wt. per roll, lbs.	172	212	253	294
Per roll	$35.00	42.80	50.60	58.30

Ten rods in a roll.

SINGLE WALK GATES

ORNAMENTAL



Galvanized

Heavy steel tubing frame, 1⅛ in. outside diameter, filled with specification A, 9½ gauge, closely spaced double loop fence fabric.

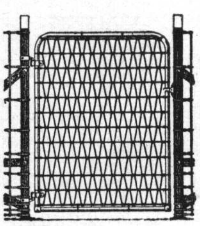
Complete with fixtures for wood posts. If for steel posts add $1.50 each to following prices.

	Width opening, ft.			
	3		3½	
Height, in.	Each	Wt. ea., lbs.	Each	Wt. ea., lbs.
36	$10.10	21	$10.85	24
42	10.85	22	11.30	25
48	11.30	25	11.70	27

Open stock.

Note—When ordering, specify if wanted for wood, tubular steel or angle steel posts.

PLAIN TOP



Galvanized

Heavy steel tubing frame, ¾ in. outside diameter, filled with 2x4 in. V mesh fabric made up of No. 10 gauge line wires and No. 12½ gauge cross wires. The close mesh prohibits small animals passing through the gate and does not give foothold for children to swing on it.

Complete with fixtures for wood posts. If for steel posts add $1.50 each to following prices.

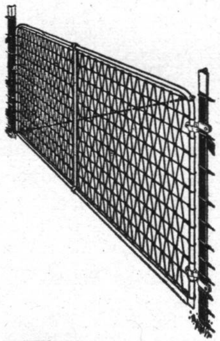
Width opening, ft.	Each	Wt. each, lbs.
	42 in. High	
3	$ 8.55	19
3½	9.40	21
4	10.10	22
	50 in. High	
3	$ 9.45	21
3½	10.05	23
4	10.90	24
	58 in. High	
3	$10.20	23
3½	11.00	25
4	11.75	27

Open stock.

Note—When ordering, specify if wanted for wood, tubular steel or angle steel posts.

SINGLE DRIVE GATES

PLAIN TOP



Galvanized

Heavy steel tubing frame, 1⅜ in. outside diameter, filled with 2x4 in. V mesh fabric made up of No. 10 gauge line wires and No. 12½ gauge cross wires.

Complete with fixtures for wood posts. If for steel posts add $2.50 each to following prices.

Width opening, ft.	Each	Wt. each, lbs.
	42 in. High	
8	$21.25	53
10	24.50	56
12	27.90	65
14	32.25	73
	50 in. High	
8	$23.00	57
10	26.60	61
12	30.40	71
14	36.10	80
	58 in. High	
8	$24.75	63
10	28.75	67
12	32.45	77
14	39.15	87

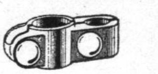
Open stock.

Note—When ordering, specify if wanted for wood, tubular or angle steel posts.

DOUBLE DRIVE GATES

Note—Double Drive Gates can be furnished in any width and same heights as Single Drive Gates listed above.

GATE FITTINGS

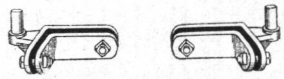


For Hanging Gates on Steel or Wood Posts

Each

No. 1—Drive gate hinge, for 1⅜ in. outside diameter tubing; wt. each .88 lb. $0.65

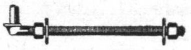
No. 2—Walk gate hinge, for 1⅛ in. outside diameter tubing; wt. each .75 lb. 55



For Angle Steel Posts

Each

No. 5—Hinge bolts, with clamps; wt. each 1.56 lbs. $0.90

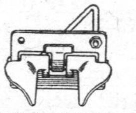


For Wood Posts

Each

No. 4—Hinge bolts, for single drive gates; wt. each 1.38 lbs. $0.40

No. 6—Hinge bolts, for walk gates; wt. each 1.12 lbs. 40



For Wood or Angle Steel Posts

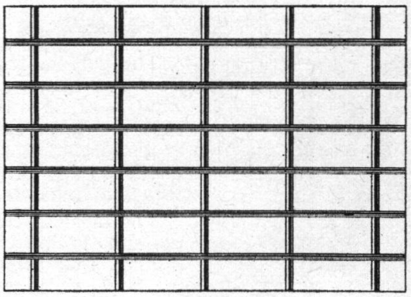
Each

No. 9—Walk or single drive gate latches; wt. each .80 lb. $1.00

Open stock.

WELDED WIRE FABRIC

GENERAL PURPOSE



Galvanized

Made of hard firm wire carefully welded, smooth selvage edge.

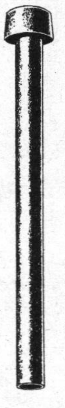
A Few Uses

Animal pens and cages, Treleis, Tree and shrub guards, Lawn fences, Trash burners, Tennis courts, Children's play pens, Silos, Window guards, Laying batteries, Feeding pens, Corn cribs, Poultry floors, Sorting tables, Animal runs, Shipping crates, Partitions, Guards, Screening fabric, Grilles, Concrete and Stucco reinforcement.

Mesh, in.			36 in. Wide		48 in. Wide	
Longitudinal (line)		Transverse (stay)	Per roll	Wt. roll, lbs.	Per roll	Wt. roll, lbs.
			16 Gauge			
1	x	1	$26.65	75	$35.55	100
			14 Gauge			
1	x	1	$38.75	124	$51.65	164
1	x	2	22.20	93	29.10	122
2	x	1	23.50	93	31.30	122
			12½ Gauge			
2	x	4	$16.75	72	$22.30	95
4	x	1	30.90	118	41.20	156
4	x	2	16.75	72	22.30	95

100 lineal feet in a roll.

STEEL POST DRIVERS



Finished in Green Enamel

For driving steel line fence posts. Enables a man, without extra help, to set many posts in a day in perfect alignment.

Fits over the top of post protecting it from damage, and makes driving easy and rapid under normal conditions of soil.

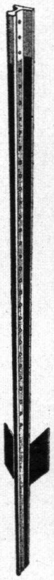
Each

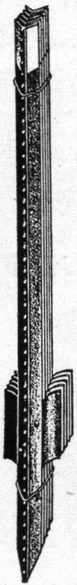
Post Driver—31¾ in. long, 3 in. inside diam.; wt. each 26 lbs. $4.00

Open stock.

STEEL FENCE POSTS

TEE AND ANGLE, LINE


"Tee"


"Angle"

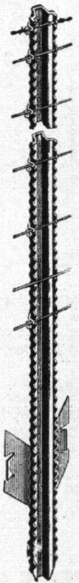
Made from special heat, new billet, open hearth steel. Protection from corrosive attack is provided by the extra heavy weatherproof enamel, the best protective material yet devised. It resists alkali, acid and normal climatic abuse.

For heavy duty serviceable fencing use "Tee" or "Angle" types. For temporary, drift or creep fences use the "U" section type.

"Tee" Type—A rail section post; holes punched in web and spaced to receive wire clamps which are furnished for attaching woven or barbed wire. Strongly riveted steel anchor plate.

"Angle" Type—1⅝x1⅝x$\frac{3}{32}$ in. steel angle; notches in backbone are spaced to hold any style of fence or netting by means of steel clamps furnished. Patented anchor plate riveted to post.

Length, ft.	Tee and Angle Each	 Wt. each, lbs.
5	$1.15	7.32
5½	1.25	7.99
6	1.35	8.65
6½	1.40	9.32
7	1.50	9.98
7½	1.55	10.65
8	1.60	11.31



IDEAL "U" TYPE LINE

Rolled from specially selected steel into a wide faced U-type post, having a large ground facing surface. They are strong, durable and attractive. Notches spaced ¾ in. apart on both sides of the face make it possible to attach fence wires wherever they cross the post.

Ideal Loop Clamps are easily attached and securely hold fence or barbed wire at exact points desired yet allow enough side slips in loop to distribute strain.

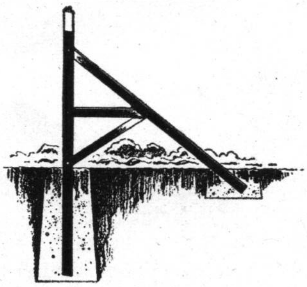
Style .... D
Width across face, in. .... 1$\frac{15}{16}$
Depth, in. .... 1$\frac{3}{16}$
Width across back, in. .... $\frac{25}{32}$
Thickness of face, in. ..... $\frac{9}{64}$
Thickness of sides, in. .... ⅛
Wt. per foot, lbs. 1.329

Length, ft.	Each	Wt. each, lbs.
5	$1.15	7.32
5½	1.25	7.99
6	1.35	8.65
6½	1.40	9.32
7	1.50	9.98
7½	1.55	10.65
8	1.60	11.31

Above, five in a bundle, with clamps.

STEEL FENCE POSTS

END OR GATE



To Be Set in Concrete

Made to conform in general design and appearance with angle type line posts, but are made of heavier section for added strength.

Post is 2½x2½x¼ in. Brace is 2x2x¼ in.; brace is same length as post.

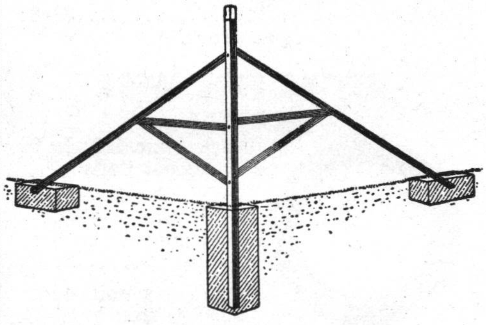
Furnished with all necessary fittings.

With One Brace

Length, ft.	Each	Wt. each, lbs.
6	$6.00	44
7	7.00	51
7⅔	7.75	56
9	9.00	66
10	10.00	82
11	11.00	103

Open stock.

CORNER



To Be Set in Concrete

Made to conform in general design and appearance with angle type line posts, but are made of heavier section for added strength.

Post is 2½x2½x¼ in. Braces are 2x2x¼ in., brace is same length as post.

Furnished with all necessary fittings.

With Two Braces

Length, ft.	Each	Wt. each, lbs.
6	$8.40	63
7	9.80	73
7⅔	10.70	80
9	12.60	94
10	14.00	123
11	15.40	170

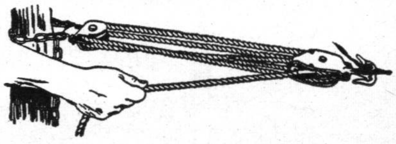
Open stock.

Special Note

Pull posts furnished on special order. They are similar to corner posts except braces are parallel to fence line.

WIRE STRETCHERS

DURBIN-DURCO



Double Swivel, Roller Bearing

All steel heavy duty construction. Steel never-slip safety lock.

Equipped with 16 feet of ⅜ in. sisal rope and 30 in. of No. 2/0 Tenso chain.

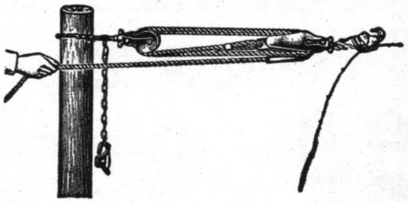
Malleable non-slipping wire grip with swivel.

Painted green.

	Each
No. 44—4 sheaves; wt. each 4¼ lbs.	**$3.40**

Open stock.

STARLINE CORRECT-WAY



Roller Bearing

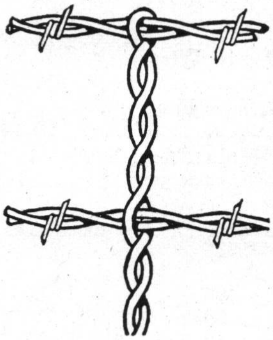
Built on the right principle. The operator stands behind the post without danger from the wire. He pulls the wire in the same direction in which it travels toward the post; reducing friction and doubling the efficiency of the pull.

Heavy 2½ in. pressed steel sheaves turn on roller bearings. Diamond point digs into post and prevents stretcher from slipping down. Gray enamel finish. Equipped with Come-Along wire grip and extra grip on chain end for splicing wire. Complete with 20 ft. of ½ in. rope and 30 in. of 2/0 post chain.

	Each
No. 714G—4 sheaves, mechanical advantage 5 to 1; wt. each 8 lbs. ..	**$7.20**

Open stock.

CINCH FENCE STAYS



No. 9½ Gauge Galvanized Wire

Adds strength and rigidity to any fence. Performs the function of an extra vertical stay wire but are stronger and better.

Easy to put on, will not slip or come loose.

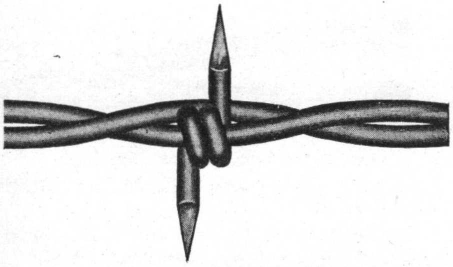
Enable fence posts to be spaced further apart.

Length, in.	Per 1000	Wt. per 1000, lbs.
38	$104.00	365
42	110.00	405
48	124.00	465

100 in a bundle.

BARBED FENCE WIRE

STANDARD, TWO POINT



Galvanized; On 80 Rod Reels

Round barbs are No. 14 wrapped twice around one of the strands. Strands are No. 12½ gauge wire.

Per reel

Standard—Barbs 4 in. apart; wt. per reel 80½ lbs. $13.00

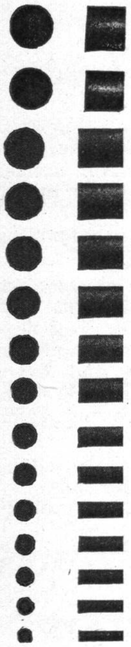
Open stock.

PLAIN FENCE WIRE

BLACK AND GALVANIZED

Illustration shows full size cuts.

U.S. Steel Wire Gauge



Ga. No.	Diam. of wire, in.	Pounds per ft.	Feet to lb.
4	.2253	.1354	7.386
5	.2070	.1143	8.750
6	.1920	.0983	10.17
7	.1770	.0835	11.97
8	.1620	.070	14.29
9	.1483	.0586	17.05
10	.1350	.0486	20.57
11	.1205	.0387	25.82
12	.1055	.0296	33.69
13	.0915	.0223	44.78
14	.0800	.0170	58.58
15	.0720	.0138	72.32
16	.0625	.0104	95.98
17	.0540	.0077	128.6
18	.0475	.006	166.2

In 100 lb. bundles.

Per 100 pounds

BLACK—Plain Fence Wire
Base Price $10.35

GALVANIZED—Plain Fence Wire
Base Price 10.80

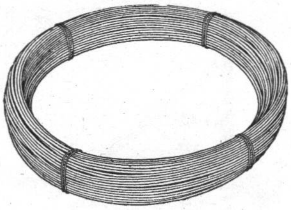
Extras on Plain Fence Wire

Extras for size over base per 100 pounds.

Wire gauge Nos.	Black	Galvanized
4	$0.95	$....
6 to 8 inc.	Base	Base
9	.05	.05
10	.10	.10
11	.15	.15
12	.20	.25
12½	.25	.35
13	.25	.35
14	.35	.55
15	.55	.85
16	.75	1.10
17	1.00	1.45
18	1.50	2.25

MARKET WIRE

STEEL



Bright

In 100 lb. bundles.

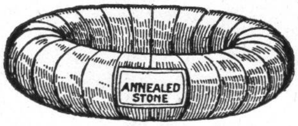
Extras for size over base per 100 pounds.

Wire gauge Nos.	Extra	Wire gauge Nos.	Extra
0	$1.05	9	$1.05
3	.95	10	1.10
4	.95	11	1.15
6	.80	12	1.20
7	.80	13	1.25
8	1.00	14	1.35

Open stock.

STONE WIRE

STEEL



In paper wrapped coils, 8 in. inside diameter. Weight per stone 12 lbs.

Black

Gauge Nos.	19	20
Per stone	$3.85	3.90

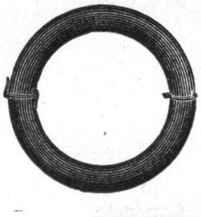
Galvanized

Gauge No.	19
Per stone	$4.80

Open stock.

STOVE PIPE WIRE

STEEL



Black Annealed; In 90 Foot Coils

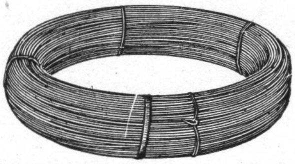
Per dozen coils

No. 20 Gauge—Wt. per dozen coils 4 lbs. $2.80

One dozen coils in a box.

TELEPHONE AND TELEGRAPH WIRE

AMERTEL



Genuine "BB," Extra Soft, Zinc Coated

Combines conductivity with tensile strength to make a very popular grade.

Weight per mile ohm, 5600 to 6000 pounds.

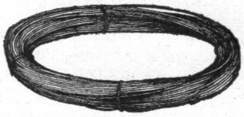
Tested physically and electrically.

Size, B.W.G.	9	12
Diam., in.	.148	.109
Ap. breaking strain, lbs.	880	475
Approx. wt., lbs.		
Per 1000 ft.	66	32
Per mile	314	170
Per coil	$35.15	19.85

One-half mile in a coil.

COPPER WIRE

SOFT



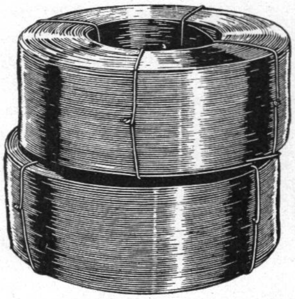
For Ground Service

In 100 to 150 lb. coils.

AWG gauge, Nos.	6	8
Feet in a pound	12.58	20.01
Wt. per 1000 ft., lbs.	79.46	49.98
Per pound	$0.55	.56

Open stock.

BALING WIRE



Annealed Steel Wire

Per carton

For John Deere Balers—15 ga., 43 lb. coils, 2 coils per carton (we do not break cartons) $15.20

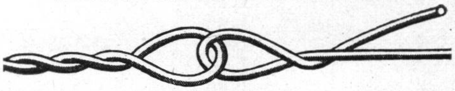
Per coil

For International Harvester Balers—15 ga., 100 lb. coil $17.50

For Minneapolis-Moline Balers—14 ga., 100 lb. coil 17.30

BALE TIES

SINGLE LOOP ADJUSTABLE



No. 15 Gauge

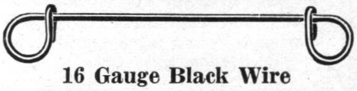
Annealed steel wire. Loop formed over a 5/16 in. pin.

Length, ft.	8½	9
Wt. per bundle, lbs.	30.5	32.3
Per bundle	$10.05	10.60

250 in a bundle.

WIRE BAR TIES

TY-TITE



16 Gauge Black Wire

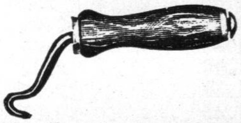
Made of soft annealed wire. For tying concrete reinforcing bars.

Put up in coils of 5000 ties. In lots of less than 5000, add 25 cents net per 1000 or fraction.

Lgth., in.	Per 100	Wt. per 1000, lbs.	Lgth., in.	Per 100	Wt. per 1000, lbs.
5	$1.20	35	7½	$1.40	46
5½	1.20	37	8	1.50	48
6	1.30	39	8½	1.50	50
6½	1.30	41	9	1.70	52
7	1.40	43			

WIRE BAR TIE TWISTERS

TY-TITE PISTOL GRIP



Wood Grip

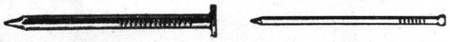
A couple of cranking motions twist the tie.

Each

No. 5—6 in. long; wt. each ¼ lb. ...$1.00

Open stock.

MISCELLANEOUS WIRE NAILS AND WIRE BRADS



List Per Pound in 100 Pound Kegs

½ Inch

Ga.	F.H. Nails	Brads
15	$0.41	$0.45
16	.45	.49
17	.51	.56
18	.61	.66
19	.74	.81
20	.87	.97

⅝ Inch

Ga.	F.H. Nails	Brads
15	$0.41	$0.44
16	.46	.49
17	.48	.51
18	.54	.57
19	.64	.69
20	.76	.81

¾ Inch

Ga.	F.H. Nails	Brads
15	$0.38	$0.41
16	.39	.42
17	.42	.45
18	.48	.52
19	.57	.62
20	.68	.73

⅞ Inch

Ga.	F.H. Nails	Brads
15	$0.37	$0.40
16	.38	.41
17	.40	.43
18	.45	.48
19	.55	.58
20	.63	.67

1 and 1⅛ Inch

Ga.	F.H. Nails	Brads
15	$0.35	$0.38
16	.36	.39
17	.37	.40
18	.43	.46
19	.52	.55
20	.61	.64

1¼ and 1⅜ Inch

Ga.	F.H. Nails	Brads
15	$0.33	$0.36
16	.34	.37
17	.36	.39
18	.37	.40

1½ and 1⅝ Inch

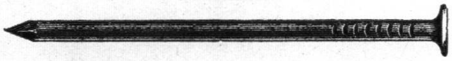
Ga.	F.H. Nails	Brads
15	$0.33	$0.36
16	.33	.36
17	.35	.38
18	.35	.38

Packing Extras to be Added to List Prices

	Per pound
50 lb. fibre carton	$0.02
25 lb. fibre carton	.03
10 lb. fibre carton	.05
5 lb. fibre carton	.05
5 lb. papers—10 in a carton	.06
1 lb. papers—50 in a carton	.12
½ lb. papers—100 in a carton	.15
¼ lb. papers—12 in a carton	.28

STEEL WIRE NAILS

COMMON



Flat head, diamond point.

Bright

Size	Per 100 pounds	Lgth., in.	Gauge No.	Av. No. to lb.
3d	$18.65	1¼	14	543
4d	17.45	1½	12½	294
5d	16.95	1¾	12½	254
6d	16.50	2	11½	167
7d	16.25	2¼	11½	150
8d	16.10	2½	10¼	101
10d	15.50	3	9	66
12d	15.50	3¼	9	61
16d	15.40	3½	8	47
20d	15.40	4	6	29
30d	15.40	4½	5	22
40d	15.40	5	4	17
50d	15.40	5½	3	13
60d	15.30	6	2	10

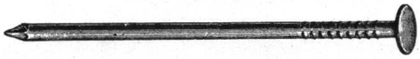
Blued

Size	Per 100 pounds	Lgth., in.	Gauge No.	Av. No. to lb.
3d	$19.45	1¼	14	543

100 pounds net in a keg; gross wt. per keg 107 pounds.

STEEL WIRE NAILS

SMOOTH BOX



Large flat head, diamond point.

Bright

Size	Per 100 pounds	Lgth., in.	Gauge No.	Av. No. to lb.
3d	$18.40	1¼	14½	588
4d	18.15	1½	14	453
5d	18.05	1¾	14	389
6d	17.90	2	12½	225
7d	17.20	2¼	12½	200
8d	16.70	2½	11½	136
10d	16.35	3	10½	90
16d	16.00	3½	10	69
20d	15.90	4	9	50

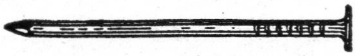
Galvanized

Size	Per 100 pounds	Lgth., in.	Gauge No.	Av. No. to lb.
3d	$21.35	1¼	14½	588
4d	21.10	1½	14	453
5d	21.00	1¾	14	389
6d	20.85	2	12½	225
7d	20.15	2¼	12½	200
8d	19.65	2½	11½	136

CEMENT COATED BOX

For Greater Holding Power

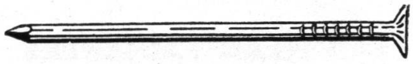
The holding ability of the coating compound has been measured and tried by experience and proved adequate for any service where necessary to employ nails of extra holding power over plain nails.



Large flat head, diamond point.

Size	Per 100 pounds	Lgth., in.	Gauge No.	Av. No. to lb.
3d	$21.40	1⅛	16	978
4d	20.80	1⅜	15½	680
5d	19.95	1⅝	15	510
6d	18.75	1⅞	13½	315
7d	18.15	2⅛	13½	280
8d	17.70	2⅜	12½	190
10d	16.95	2⅞	11½	119

CEMENT COATED COMMON



Flat head, diamond point. For use in all styles of wooden shipping packages and for all the everyday uses to which nails are put. The heads cannot break or pull off.

Sizes 5d through 10d order **Cement Coated Standard.**

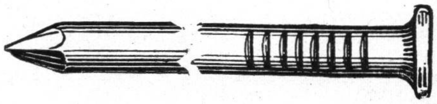
Sizes 12d through 40d order **Common Nails, Cement Coated.**

Size	Per 100 pounds	Lgth., in.	Gauge No.	Av. No. to lb.
5d	$19.40	1⅝	13½	364
6d	19.10	1⅞	13	275
7d	18.80	2⅛	12½	212
8d	18.50	2⅜	11½	142
10d	18.05	2⅞	11	104
12d	17.80	3¼	9	61
16d	17.55	3½	8	47
20d	17.45	4	6	29
30d	17.20	4½	5	22
40d	16.95	5	4	17

All above, 100 pounds net in a keg; gross wt. per keg 107 pounds.

STEEL WIRE NAILS

ROUND WIRE SPIKES

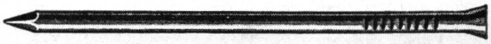


Flat head; diamond point.

Bright

Lgth., in.	Per 100 pounds	Diam., in.	Diam. head, in.	Av. No. to lb.
7	$17.55	5/16	⅝	6
8	17.20	5/16	⅝	5½
8	17.20	⅜	¾	4
10	17.20	⅜	¾	3
12	18.90	⅜	¾	2½

CASING

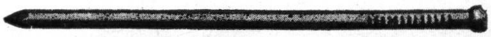


Deep countersunk kuphed, diamond point.

Bright

Size	Per 100 pounds	Lgth., in.	Gauge No.	Av. No. to lb.
4d	$19.00	1½	14	489
6d	17.80	2	12½	244
8d	16.85	2½	11½	147
10d	16.70	3	10½	96
16d	16.50	3½	10	73

FINISHING

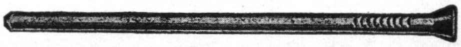


Brad kuphed, diamond point.

Bright

Size	Per 100 pounds	Lgth., in.	Gauge No.	Av. No. to lb.
4d	$20.70	1½	15	630
6d	19.35	2	13	288
8d	18.80	2½	12½	196
10d	18.40	3	11½	124

GEER FLOORING



Kuphed, blunt point.

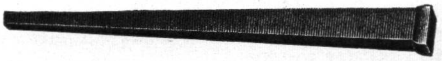
A hard nail of special steel; will not bend. Blunt point will not split hardwood.

Bright

Size	Per 100 pounds	Lgth., in.	Gauge No.	Av. No. to lb.
8d	$18.30	2½	11½	137

CUT NAILS

FLOORING



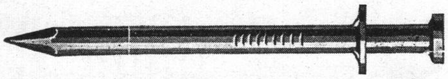
Quenched and Tempered; Black

Size	Per 100 lbs.	Lgth., in.	Av. No. to lb.
8d	$31.40	2½	90

All above, 100 pounds net in a keg; gross wt. per keg 107 pounds.

STEEL WIRE NAILS

DUPLEX HEAD SCAFFOLD

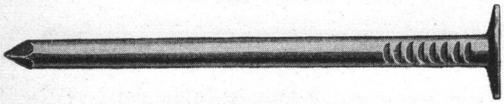


Easy to drive and easy to pull out. For scaffolding, foundation and form work, displays and all temporary construction. Holds securely yet is easily removed.

Bright

Size	Per 100 pounds	Length under lower head, in.	Dist. between heads, in.	Ga. No.	Av. No. to lb.
8d	$23.70	2¼	¼	10¼	90
16d	21.50	2¾	5/16	9	59
20d	21.05	3	⅜	8	45

SMOOTH FOUNDRY



Large flat head, diamond point.

Bright; 7/16 in. Diameter Head

No. 11 Gauge

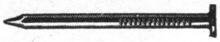
Length, in.	Per 100 pounds	Av. No. to lb.
2	$22.95	142
2½	22.95	115
3	22.55	95
3½	22.50	80
4	22.45	72
5	23.05	60
6	23.40	50

Bright; ½ in. Diameter Head

No. 10 Gauge

Length, in.	Per 100 pounds	Av. No. to lb.
3½	$25.45	70
5	25.55	49
5½	25.75	45

FINE



Flat head, diamond point.

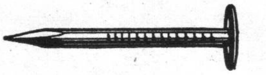
Bright

Size	Per 100 pounds	Lgth., in.	Gauge No.	Av. No. to lb.
3d	$19.55	1⅛	15	778

Blued; for Plywood

Size	Per 100 pounds	Lgth., in.	Gauge No.	Av. No. to lb.
3d	$22.10	1⅛	15	778

SPECIAL BLUED PLASTER BOARD



Large flat heads and sharp diamond points make these nails ideal for use on all kinds of wall board materials such as Celotex, etc. They are sterilized and can be safely fed from the mouth.

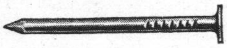
The nails are not touched by human hands from the time they are blued. Paper-lined kegs further insure a clean and sanitary product.

Length, in.	Per 100 pounds	Gauge No.	Diam. head, in.	Av. No. to lb.
1⅛	$22.25	13	19/64	448
1¼	21.65	13	19/64	387

All above, 100 pounds net in a keg; gross wt. per keg 107 pounds.

STEEL WIRE NAILS

STERILIZED BLUED LATH

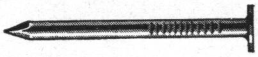


Flat head, diamond point.

Free from all injurious substances and may be carried in the mouth. Packed in paper lined kegs.

Size	Per 100 pounds	Lgth., in.	Gauge No.	Av. No. to lb.
2d	$24.85	1	16½	1280
3d	21.50	1⅛	15	757

SHINGLE



Flat head, diamond point.

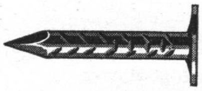
Bright

Size	Per 100 pounds	Lgth., in.	Gauge No.	Av. No. to lb.
3d	$18.40	1¼	13	429

Galvanized

Size	Per 100 pounds	Lgth., in.	Gauge No.	Av. No. to lb.
3d	$21.35	1¼	13	429

LARGE HEAD ROOFING

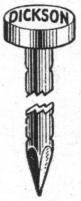


Diamond point, flat head.

No. 10 Gauge; 15/32 in. Head

Length, in.	Bright Barbed Per 100 pounds	Bright Barbed Av. No. to lb.	Galv. Barbed Per 100 pounds	Galv. Barbed Av. No. to lb.
¾	$23.05	253	$26.00	253
⅞	19.50	220	25.40	220
1	19.00	200	24.90	200
1¼	18.30	170	24.20	170
1½	17.80	152	23.70	152
1¾	17.45	132	23.35	132

LEAD HEAD ROOFING



The head is completely covered with highly compressed pure lead, making a perfect seal of the nail hole in galvanized roofing, preventing nails from rusting away.

Length, in.	Per 100 pounds	Gauge No.	Diam. head, in.	Av. No. to lb.
1½	$45.20	10	⅜	96
1¾	44.00	10	⅜	88

LEAD HEAD FASTENERS

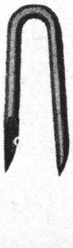
No. 10 Gauge; For Fastening Corrugated Sheets to Structurals

Lgth., in.	Per 100 lbs.	Ap. No. to lb.	Lgth., in.	Per 100 lbs.	Ap. No. to lb.
4	$50.00	33	8	$50.00	22
5	50.00	30	10	50.00	18
6	50.00	27	12	50.00	16
7	50.00	24			

All above, 100 pounds net in a keg; gross wt. per keg 107 pounds.

POULTRY NETTING STAPLES

STEEL WIRE



No. 14 Gauge

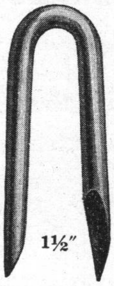
3/16 in. spread at shoulders.

Lgth., in.	Galv. Per 100 lbs.	Pol. Per 100 lbs.	Av. No. to lb.
¾	$18.45	$15.50	480

100 pounds in a keg.

FENCE STAPLES

STEEL WIRE



No. 9 Gauge

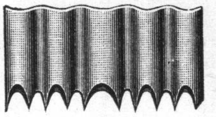
¼ in. spread at shoulders.

Lgth., in.	Galv., Per 100 lbs.	Pol., Per 100 lbs.	Av. No. to lb.
1	$18.30	$16.00	108
1¼	18.30	16.00	87
1½	18.30	16.00	72
1¾	.....	16.00	65

100 pounds net in a keg; gross wt. per keg 107 lbs.

CORRUGATED STEEL FASTENERS

DIVERGENT SAW EDGE



Cold Rolled Steel

For use in making boxes, repairing picture frames, screen doors, window screen frames, or any other wood article where a joint fastener is required.

Drives easily into soft or hard wood.

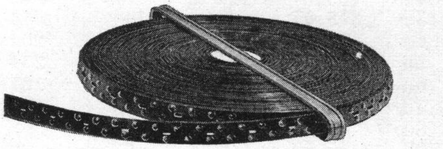
Hold securely—the corrugations interlock with the grain of wood holding joints securely together and at same time prevent the wood from splitting. Cold rolled special steel, corrugated and sharpened on the end.

Size Nos.	Per 1000	Size, in.	No. of corrugations	Wt. per 1000, lbs.
¼x4	$1.50	¼x 11/16	4	1½
⅜x4	1.90	⅜x 11/16	4	1¾
½x4	2.10	½x 11/16	4	2¾
⅝x4	2.60	⅝x 11/16	4	3
¾x4	2.90	¾x 11/16	4	3¾
¼x5	1.80	¼x 15/16	5	1½
⅜x5	2.40	⅜x 15/16	5	2¼
½x5	2.60	½x 15/16	5	3¼
⅝x5	3.40	⅝x 15/16	5	4¼
¾x5	3.70	¾x 15/16	5	5
⅜x6	2.80	⅜x1⅛	6	3
½x6	3.00	½x1⅛	6	3¾

100 in a box.

BOX STRAPPING

ACME NAILEZY EMBOSSED



Cold Rolled Steel, Black Finish

Specially tempered; standard .015 in. thickness, with two rows of bosses in staggered formation. Bosses are of sufficient height to protect nail heads.

1/16x3/16 in. slots at 1½ in. intervals permit speed as well as accuracy in nailing.

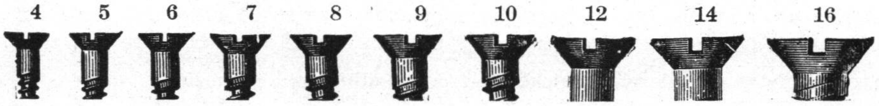
300 Foot Coils

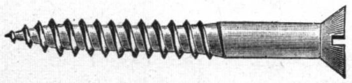
	Per coil
¾ in. Wide—Wt. per coil 11½ lbs.	$4.80

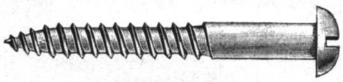
Twenty coils in a case.

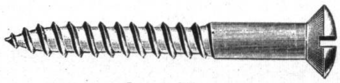
WOOD SCREWS

FLAT, ROUND OR OVAL HEAD




Flat Head


Round Head


Oval Head

Wood screws are available in sizes marked—FRO, FR, F or R. FRO indicates that size is supplied in Flat, Round and Oval Head. FR indicates that size is supplied in Flat and Round Head. F indicates that size is supplied in Flat Head only.

Orders must specify type of head and finish. Packed one gross per carton, sold in gross lots per size.

STEEL

Steel screws are available in bright, blued and in the following plated finishes: chromium, nickel, brass, bronze, copper, cadmium, zinc, Parkerized or hot galvanized.

Note—All steel wood screws are invoiced from this list at discount varying with style of head and finish.

Length, in.	Per gross	Wt. gross, lbs.	Gross in bdle.
No. 2 Diameter			
¼FR	$0.88	.06	10
⅜FR	.92	.08	10
½FR	.96	.10	10
⅝FR	1.00	.12	10
No. 3 Diameter			
⅜FR	$0.92	.10	10
½FR	.96	.13	10
⅝FR	1.00	.16	10
No. 4 Diameter			
¼FR	$0.92	.10	10
⅜FRO	.96	.13	10
½FRO	1.00	.17	10
⅝FRO	1.04	.20	10
¾FRO	1.08	.23	10
⅞FR	1.12	.26	10
1 FR	1.20	.30	10
1¼F	1.42	.37	10
No. 5 Diameter			
⅜FR	$0.96	.17	10
½FRO	1.00	.21	10
⅝FRO	1.04	.25	10
¾FRO	1.08	.29	10
⅞FR	1.12	.34	10
No. 5 Diameter (Cont'd)			
1 FRO	$1.20	.38	10
1¼F	1.42	.46	10
No. 6 Diameter			
⅜FRO	$1.00	.20	10
½FRO	1.04	.26	10
⅝FRO	1.08	.31	10
¾FRO	1.12	.36	10
⅞FRO	1.20	.41	10
1 FRO	1.32	.47	10
1¼FRO	1.50	.57	10
1½FRO	1.66	.68	10
No. 7 Diameter			
½FR	$1.08	.31	10
⅝FR	1.12	.38	10
¾FRO	1.20	.44	10
⅞FR	1.28	.50	10
1 FRO	1.40	.57	10
1¼FRO	1.54	.69	10
1½FRO	1.70	.82	10
No. 8 Diameter			
½FR	$1.16	.38	10
⅝FRO	1.20	.45	10
¾FRO	1.28	.53	10
⅞FRO	1.36	.60	10
1 FRO	1.46	.68	10
1¼FRO	1.62	.83	10
1½FRO	1.80	.98	10
1¾FR	2.00	1.13	10
2 FR	2.20	1.28	5
2½FR	2.62	1.58	5
No. 9 Diameter			
¾FR	$1.42	.62	10
⅞FR	1.50	.71	10
1 FR	1.58	.80	10
1¼FR	1.74	.97	10
1½FR	1.96	1.15	10
1¾F	2.18	1.32	5
2 FR	2.38	1.50	5
2½F	2.80	1.86	5
No. 10 Diameter			
¾FR	$1.58	.73	10
⅞FR	1.66	.83	10
1 FRO	1.74	.93	10
1¼FRO	1.92	1.13	10
1½FRO	2.12	1.34	10
No. 10 Diameter (Cont'd)			
1¾FRO	$2.34	1.54	5
2 FRO	2.56	1.74	5
2¼F	2.80	1.94	5
2½FR	3.04	2.15	5
3 FR	3.54	2.55	5
3½F	4.92	2.96	5
No. 12 Diameter			
¾FR	$1.80	.96	10
⅞FR	1.96	1.10	10
1 FR	2.12	1.23	10
1¼FRO	2.30	1.49	10
1½FRO	2.54	1.75	5
1¾FRO	2.84	2.02	5
2 FRO	3.14	2.28	5
2¼F	3.46	2.54	5
2½FR	3.78	2.81	5
3 FR	4.80	3.33	5
3½F	5.84	3.86	2½
No. 14 Diameter			
1 FR	$2.62	1.57	10
1¼FR	2.96	1.90	5
1½FR	3.30	2.23	5
1¾FR	3.64	2.57	5
2 FR	3.98	2.90	5
2¼F	4.34	3.23	1
2½FR	4.84	3.56	1
3 FR	6.00	4.22	1
3½F	7.16	4.88	2½
4 F	8.00	5.55	½
No. 16 Diameter			
1¼F	$3.92	2.37	5
1½F	4.34	2.78	5
1¾F	4.75	3.19	5
2 F	5.16	3.59	1
2½F	6.34	4.41	1
3 F	7.50	5.22	1
3½F	8.35	6.04	2½
4 F	9.15	6.85	½
No. 18 Diameter			
1½F	$5.30	3.39	5
2 F	6.40	4.37	1
2½F	7.90	5.35	1
3 F	9.40	6.34	2½
3½F	10.45	7.32	2½
4 F	11.75	8.30	½

BRASS

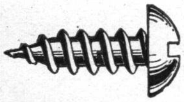
Available in plain brass in head styles indicated in table below. Also available in chromium plated and nickel plated finishes.
Note—All brass wood screws are invoiced from this list at discount varying with styles of head and finish.

Lgth., in.	Per gross	Gross in bdle.
No. 2 Diameter		
¼FR	$1.12	10
⅜FR	1.22	10
½FR	1.34	10
No. 3 Diameter		
⅜F	$1.32	10
½F	1.44	10
No. 4 Diameter		
¼FR	$1.30	10
⅜FRO	1.44	10
½FRO	1.58	10
⅝FRO	1.76	10
¾FRO	1.96	10
⅞F	2.16	10
1 FR	2.38	10
No. 5 Diameter		
½FRO	$1.74	10
⅝FRO	1.96	10
¾FRO	2.20	10
⅞F	2.42	10
1 FRO	2.64	10
No. 6 Diameter		
⅜R	$1.75	10
½FRO	1.94	10
⅝FRO	2.20	10
¾FRO	2.45	10
⅞FRO	2.70	10
1 FRO	2.98	10
1¼FRO	3.46	10
1½FRO	4.08	10
No. 7 Diameter		
¾FR	$2.84	10
⅞F	3.14	10
1 FRO	3.44	10
1¼FRO	4.05	10
1½FR	4.68	10
No. 8 Diameter		
½FR	$2.50	10
⅝FRO	2.84	10
¾FRO	3.18	10
⅞FRO	3.52	10
1 FRO	3.85	10
1¼FRO	4.52	10
1½FRO	5.20	10
1¾FR	5.88	10
2 FRO	6.54	5
No. 9 Diameter		
¾FR	$3.52	10
⅞F	3.92	10
1 FR	4.30	10
1¼FR	5.10	10
1½FR	5.88	10
No. 10 Diameter		
¾FR	$3.98	10
⅞FR	4.40	10
1 FRO	4.80	10
1¼FRO	5.65	10
1½FRO	6.58	10
1¾FR	7.45	5
2 FRO	8.38	5
2½FR	10.38	5
No. 12 Diameter		
1 FR	$6.25	10
1¼FR	7.28	10
1½FR	8.44	5
1¾FR	9.58	5
2 FR	10.98	5
2½FR	13.70	5
3 F	15.98	5
No. 14 Diameter		
1¼F	$ 9.32	5
1½F	10.80	5
1¾F	12.28	5
2 FR	13.70	5
2½FR	17.08	1
3 F	20.34	1
No. 16 Diameter		
2½F	$21.34	1
3 F	25.10	1

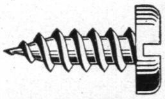
Note—For weights of Brass Screws, add 8% to weight of wood screws.

SHEET METAL SCREWS

STYLE A, STEEL



Round Head



Binding Head

Designed for joining two or more sheets of light gage sheet metal and for making fastenings to sheet metal, cutting their own thread as they are turned in with a screw driver.

Stock finishes include plain, nickel plated, cadmium, and parkerized.

Sold in Gross Lots Per Size

No. 6 Diameter

Lgth., in.	Per gross Plain steel	Per gross Plated fin.	Wt. gro., lbs.
⅜	$0.40	$0.44	.23
½	.42	.46	.30
⅝	.44	.49	.33
¾	.45	.51	.39
⅞	.46	.53	.46
1	.48	.55	.49

No. 7 Diameter

Lgth., in.	Per gross Plain steel	Per gross Plated fin.	Wt. gro., lbs.
⅜	$0.42	$0.48	.30
½	.44	.50	.36
⅝	.45	.52	.42
¾	.46	.54	.49
⅞	.48	.56	.56
1	.49	.58	.62

No. 8 Diameter

Lgth., in.	Per gross Plain steel	Per gross Plated fin.	Wt. gro., lbs.
⅜	$0.45	$0.50	.33
½	.48	.54	.40
⅝	.50	.57	.47
¾	.53	.61	.54
⅞	.56	.65	.60
1	.60	.70	.69
1¼	.65	.77	.83
1½	.70	.84	.97

No. 10 Diameter

Lgth., in.	Per gross Plain steel	Per gross Plated fin.	Wt. gro., lbs.
⅜	$0.53	$0.61	.47
½	.55	.64	.57
⅝	.57	.67	.63
¾	.60	.72	.73
⅞	.63	.76	.83
1	.66	.80	.92
1¼	.79	.95	1.10
1½	.85	1.04	1.42

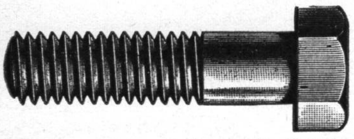
No. 12 Diameter

Lgth., in.	Per gross Plain steel	Per gross Plated fin.	Wt. gro., lbs.
½	$0.67	$0.80	.76
⅝	.71	.85	.90
¾	.75	.91	.99
⅞	.80	.97	1.13
1	.85	1.04	1.27
1¼	.95	1.17	1.52
1½	1.05	1.30	1.80

One gross in a carton, ten gross in a bundle, except 1½ in. No. 12, five gross in a bundle.

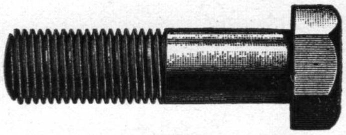
STEEL CAP SCREWS

HEXAGON HEAD



Coarse Thread, formerly USS

**Manufacturers'
Standard
List**



Fine Thread, formerly SAE

Head Dimensions and Thread Specifications

Diameter screw, in.	¼	5/16	⅜	7/16	½	9/16	⅝	¾	⅞	1
Diameter head, in.	7/16	½	9/16	⅝	¾	13/16	⅞	1	1⅛	1 5/16
Height of head, in.	3/16	15/64	9/32	21/64	⅜	27/64	15/32	9/16	21/32	¾
Threads per in.										
Coarse (USS)	20	18	16	14	13	12	11	10	9	8
Fine (SAE)	28	24	24	20	20	18	18	16	14	14

Specify American Standard Coarse (USS) or Fine (SAE) Threads on Orders

¼ in. Diameter

Lgth., in.	Per 100	Wt. 100, lbs.	No. in ctn.
½	$1.30	1.4	100
⅝	1.35	1.5	100
¾	1.40	1.7	100
⅞	1.50	1.8	100
1	1.60	2.0	100
1¼	1.80	2.3	100
1½	2.00	2.7	100
1¾	2.20	3.0	100
2	2.40	3.4	100
2¼	2.60	3.7	100
2½	2.80	4.1	100
2¾	3.00	4.4	100
3	3.30	4.5	100
3¼	4.00	5.1	100
3½	4.70	5.4	100
4	6.10	6.1	100

5/16 in. Diameter

Lgth., in.	Per 100	Wt. 100, lbs.	No. in ctn.
½	$1.50	2.3	100
⅝	1.60	2.5	100
¾	1.70	2.8	100
⅞	1.80	3.0	100
1	1.90	3.2	100
1¼	2.10	3.7	100
1½	2.30	4.3	100
1¾	2.50	4.8	100
2	2.70	5.4	100
2¼	2.90	5.9	100
2½	3.20	6.4	100
2¾	3.50	7.0	100
3	3.80	7.5	100
3¼	4.60	8.0	100
3½	5.40	8.6	100
4	7.00	9.6	100

⅜ in. Diameter

Lgth., in.	Per 100	Wt. 100, lbs.	No. in ctn.
½	$1.90	3.5	100
⅝	2.00	3.8	100
¾	2.10	4.1	100
⅞	2.20	4.5	100
1	2.30	4.8	100
1¼	2.50	5.5	100
1½	2.70	6.3	100
1¾	3.00	7.1	100
2	3.30	7.8	100
2¼	3.60	8.6	100
2½	3.90	9.3	100
2¾	4.30	10.2	100
3	4.70	10.9	100
3¼	5.30	11.7	100
3½	5.90	12.5	100
3¾	6.80	13.3	50
4	7.70	14.0	50
4½	9.50	14.0	50
5	11.30	15.6	50
5½	13.10	18.6	50
6	14.90	20.1	50

7/16 in. Diameter

Lgth., in.	Per 100	Wt. 100, lbs.	No. in ctn.
¾	$3.00	5.8	100
⅞	3.10	6.2	100
1	3.20	6.7	100
1¼	3.50	7.6	100
1½	3.80	8.6	100
1¾	4.10	9.7	100
2	4.50	10.8	100
2¼	4.90	11.8	100
2½	5.30	12.9	100
2¾	5.70	13.9	100
3	6.20	15.0	100
3¼	6.70	16.0	50
3½	7.20	17.1	50
3¾	7.90	18.1	50
4	8.60	19.2	50

½ in. Diameter

Lgth., in.	Per 100	Wt. 100, lbs.	No. in ctn.
¾	$4.70	8.7	100
⅞	4.90	9.2	100
1	5.10	9.9	100
1¼	5.50	11.1	100
1½	5.90	12.4	100
1¾	6.30	13.8	100
2	6.70	15.2	50
2¼	7.20	16.5	50
2½	7.70	17.9	50
2¾	8.20	19.3	50
3	8.70	20.7	50
3¼	9.20	22.1	50
3½	9.80	23.4	50
3¾	10.40	24.8	50
4	11.00	26.2	50
4½	13.40	28.9	50
5	15.80	31.7	50
5½	18.20	34.5	50
6	20.60	37.2	50

9/16 in. Diameter

Lgth., in.	Per 100	Wt. 100, lbs.	No. in ctn.
1	$7.90	12.8	100
1¼	8.40	14.3	50
1½	8.90	15.9	50
1¾	9.40	17.6	50
2	10.00	19.4	50
2¼	10.60	21.1	50
2½	11.20	22.8	50
2¾	11.80	24.6	50
3	12.40	26.3	50
3¼	13.00	28.1	50
3½	13.60	29.8	50
3¾	14.30	31.6	50
4	15.00	33.3	50
4½	18.00	36.8	50
5	21.00	39.7	50
5½	24.00	43.1	50
6	27.00	46.6	50

⅝ in. Diameter

Lgth., in.	Per 100	Wt. 100, lbs.	No. in ctn.
1	$8.60	16.3	50
1¼	9.20	18.2	50
1½	9.80	20.1	50
1¾	10.40	22.2	50
2	11.00	24.3	50
2¼	11.60	26.5	50
2½	12.20	28.6	25
2¾	12.80	30.8	25
3	13.50	32.9	25
3¼	14.20	35.1	25
3½	15.00	37.2	25
3¾	15.80	39.4	25
4	16.60	41.5	25
4½	18.60	45.8	25
5	22.60	50.1	25
5½	26.60	54.4	25
6	30.60	58.7	25

¾ in. Diameter

Lgth., in.	Per 100	Wt. 100, lbs.	No. in ctn.
1¼	$13.30	27.5	50
1½	14.10	30.2	50
1¾	14.90	23.0	25
2	15.70	36.0	25
2¼	16.50	39.1	25
2½	17.30	42.1	25
2¾	18.10	45.2	25
3	18.90	48.3	25
3¼	19.80	51.5	25
3½	20.80	54.6	25
3¾	21.80	57.7	25
4	22.80	60.8	25
4½	25.50	67.0	25
5	30.90	73.2	25
5½	36.30	79.4	25
6	41.70	85.6	20

⅞ in. Diameter

Lgth., in.	Per 100	Wt. 100, lbs.	No. in ctn.
2	$24.60	50.4	25
2¼	25.80	54.4	25
2½	27.20	58.6	25
2¾	28.60	62.9	20
3	30.00	67.1	20
3¼	31.50	71.3	20
3½	33.00	75.5	20
3¾	35.00	79.8	20
4	37.00	84.0	20
4½	41.00	92.4	20
5	45.00	100.9	20
5½	54.00	109.3	16
6	63.00	117.8	16

1 in. Diameter

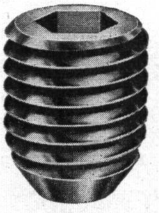
Lgth., in.	Per 100	Wt. 100, lbs.	No. in ctn.
2	$36.00	71.4	25
2¼	38.00	76.5	25
2½	40.00	81.7	25
2¾	42.00	86.5	20
3	44.00	92.7	20
3¼	46.00	98.1	20
3½	49.00	103.8	20
3¾	52.00	108.9	20
4	55.00	114.8	16
4½	61.00	125.8	16
5	68.00	136.9	12
5½	80.00	147.9	12
6	92.00	158.9	12

Add for Each ¼ in. Extra Length

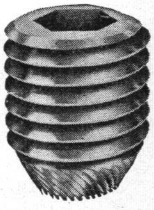
Diameter, in.	¼	5/16	⅜	7/16	½	9/16	⅝	¾	⅞	1
Per 100	$0.70	.80	.90	1.00	1.20	1.50	2.00	2.70	4.50	6.00

SAFETY HOLLOW SET SCREWS

"UNBRAKO"



Regular Type



Self-locking Type

American Standard Coarse USS) Thread

Made from high-grade alloy steel, machined to close tolerances and heat treated. Hex socket hole is large enough for wrenches, does not weaken screw. May be "set-up" as hard as required. Wrenches are made of same strong heat treated alloy steel and fit snug.

Class 3 thread fit is standard. Regular type in stock, self-locking type factory shipment.

Standard Sizes—Regular and Self-Locking
List Price Per 100

One short arm wrench furnished free with each 25 screws.
When ordering give diameter first, then length.
All sizes listed below are standard in American Standard Coarse (USS Thread Series in cup point).

Diam., No. or inch	10	¼	5/16	⅜	7/16	½	⅝	¾	⅞	1
Decimal equivalent, in.	.190	.250	.3125	.375	.4375	.500	.625	.750	.875	1.00
Threads per inch	24	20	18	16	14	13	11	10	9	8

Lgth., in.	Per 100	Wt. per 100, lbs.	No. in ctn.
No. 10 Diameter			
3/16	$4.20	⅛	100
¼	4.25	3/16	100
5/16	4.30	¼	100
⅜	4.40	5/16	100
7/16	4.60	⅜	100
½	4.90	⅜	100
⅝	5.20	7/16	100
¾	5.50	½	100
⅞	5.80	⅝	100
1	6.10	¾	100
1¼	6.65	1	100
¼ in. Diameter			
3/16	$4.30	3/16	100
¼	4.35	¼	100
5/16	4.40	5/16	100
⅜	4.50	⅜	100
7/16	4.70	7/16	100
½	5.00	½	100
⅝	5.35	⅝	100
¾	5.70	¾	100
⅞	6.05	⅞	100
1	6.40	1	100
1¼	7.10	1¼	100
5/16 in. Diameter			
¼	$4.45	⅜	100
5/16	4.50	½	100
5/16 in. Diameter—Cont'd			
⅜	$4.60	⅝	100
7/16	4.80	11/16	100
½	5.10	¾	100
⅝	5.50	⅞	100
¾	6.00	1 3/16	100
⅞	6.50	1 7/16	100
1	7.00	1½	100
1¼	7.60	2	100
1½	8.40	2½	100
⅜ in. Diameter			
¼	$4.55	11/16	100
5/16	4.60	¾	100
⅜	4.70	15/16	100
7/16	4.90	1	100
½	5.20	1⅛	100
⅝	5.60	1 5/16	100
¾	6.20	1 13/16	100
⅞	6.80	2	100
1	7.40	2 5/16	100
1¼	8.20	3	100
1½	9.20	3⅝	100
7/16 in. Diameter			
⅜	$5.90	1⅜	100
7/16	6.10	1½	100
½	6.40	1¾	100
7/16 in. Diameter—Cont'd			
⅝	$ 6.80	2	100
¾	7.40	2¼	100
⅞	8.00	3	100
1	8.70	3¼	100
1¼	9.50	4	100
1½	11.00	4⅞	100
½ in. Diameter			
⅜	$ 6.90	1⅝	100
7/16	7.10	1⅞	100
½	7.40	2	100
⅝	7.80	2¼	100
¾	8.40	2⅜	100
⅞	9.00	2¾	100
1	9.70	3½	100
1¼	10.50	4	100
1½	12.00	4¾	100
⅝ in. Diameter			
½	$ 9.90	3	100
⅝	10.30	3⅝	50
¾	10.90	4⅛	50
⅞	11.50	5⅛	50
1	12.50	6	50
1¼	13.50	7¾	50
1½	14.50	9¾	50
1¾	16.50	11⅜	50
2	18.50	13	50
¾ in. Diameter			
⅝	$12.80	5½	50
¾	13.40	6½	50
⅞	14.00	7½	50
1	15.00	8½	50
1¼	16.00	11	50
1½	18.00	13	50
1¾	20.00	16	50
2	23.00	19	25
⅞ in. Diameter			
⅞	$17.00	10	25
1	18.00	11	25
1¼	20.00	14	25
1½	22.00	17	25
1¾	25.00	20	25
2	29.00	25	25
1 in. Diameter			
1	$23.00	15	25
1¼	25.00	18½	25
1½	28.00	23½	25
1¾	32.00	26	25
2	36.00	31	25

Add for Each ¼ in. in Length

Beyond last length listed above.

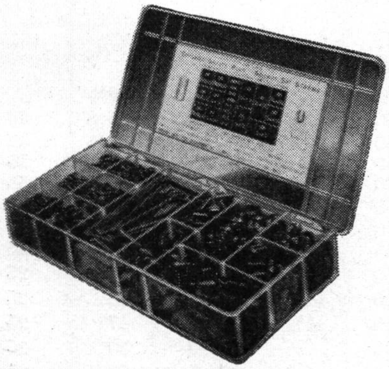
Diameter, No. and in.	10	¼	5/16	⅜	7/16	½	⅝	¾	⅞	1
Per 100	$1.55	1.60	1.90	2.25	2.80	3.50	4.75	6.00	7.00	8.00

Extra Short Arm Keys

For Screws, Nos. and in.	10	¼	5/16	⅜	7/16	½	⅝	¾	⅞	1
Hex hole, in.	3/32	⅛	5/32	3/16	7/32	¼	5/16	⅜	½	9/16
Per 100	$3.30	3.40	4.60	5.70	6.90	8.00	11.50	17.00	28.50	40.00

Open stock.

HOLLOW SET SCREW ASSORTMENTS



Contains 25 pieces each of 12 sizes of screws, and 5 pieces each of corresponding keys. Packed in attractive clear one-piece plastic box with molded partitions.

Contents of Assortment

25 each screws: 6-32x¼, 8-32 x ¼, 10-32 x ¼, 10-24 x ¼, ¼x¼, ¼x⅜, ¼x½, 5/16x5/16, 5/16x½, ⅜x⅜, ⅜x½, and ½x½ in.

5 each keys: Nos. 6, 8, 10, and ¼, 5/16, ⅜, and ½ in.

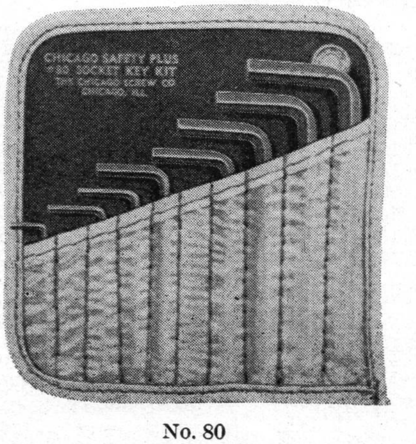
Assortment refills in standard packages of 25 pieces carried in stock.

Per assortment

No. 15—8⅜x4½x1⅜ in. container; wt. assortment 2½ lbs. $22.00

Twenty-four assortments in a carton.

HEXAGON SOCKET KEY KITS



No. 80

No. 9 Kit

Consists of 9 socket keys fitting all Hollow Set Screws from No. 8 through ¾ in. diameter. In individual size-marked heavy duty canvas fold which can be rolled and tied.

Per kit

No. 9—Wt. per kit ½ lb. $1.85

No. 80 Kit

Consists of 8 socket keys fitting all Hollow Set Screws from No. 6 through ½ in. diameter. In durable plastic pocket size fold with individual pockets for keys.

Per kit

No. 80—Wt. per kit 5 oz. $1.15

One kit in a carton.

STEEL SET SCREWS

SQUARE HEAD, CUP POINT

American Standard Coarse (USS) Threads

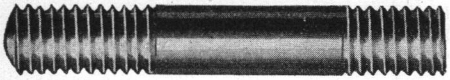
Head Dimensions and Thread Specifications

Diameter screw, in.	¼	5/16	⅜	7/16	½	9/16	⅝	¾	⅞	1
Width head, in.	¼	5/16	⅜	7/16	½	9/16	⅝	¾	⅞	1
Height head, in.	3/16	15/64	9/32	21/64	⅜	27/64	15/32	9/16	21/32	¾
Threads per inch	20	18	16	14	13	12	11	10	9	8

Lgth., in.	Per 100	Wt. per 100, lbs.	No. in ctn.
¼ in. Diameter			
½	$2.80	.83	100
⅝	2.85	.97	100
¾	2.90	1.10	100
⅞	3.10	1.23	100
1	3.25	1.36	100
1¼	3.60	1.62	100
1½	3.95	1.89	100
1¾	4.25	2.15	100
2	4.55	2.41	100
2¼	4.80	2.68	100
2½	5.10	2.94	100
2¾	5.35	3.20	100
3	5.65	3.47	100
5/16 in. Diameter			
½	$3.15	1.45	100
⅝	3.20	1.67	100
¾	3.25	1.88	100
⅞	3.40	2.10	100
1	3.55	2.30	100
1¼	3.90	2.73	100
1½	4.20	3.15	100
1¾	4.70	3.58	100
2	5.20	4.00	100
2¼	5.65	4.43	100
2½	6.15	4.85	100
2¾	6.60	5.28	100
3	7.10	5.70	100
⅜ in. Diameter			
½	$3.65	2.28	100
⅝	3.70	2.59	100
¾	3.75	2.90	100
⅞	4.00	3.22	100
1	4.30	3.53	100
1¼	4.80	4.15	100
1½	5.25	4.77	100
1¾	5.90	5.39	100
2	6.55	6.01	100
2¼	7.15	6.64	100
2½	7.75	7.26	100
2¾	8.40	7.88	100
3	9.00	8.50	100
7/16 in. Diameter			
⅝	$ 5.35	3.77	100
¾	5.45	4.20	100
⅞	5.55	4.62	100
1	5.65	5.05	100
1¼	6.15	5.90	100
1½	6.65	6.75	100
1¾	7.25	7.60	100
2	7.90	8.45	100
2¼	8.65	9.30	50
2½	9.45	10.25	50
2¾	10.15	11.00	50
3	10.90	11.85	50
3¼	11.70	12.70	50
3½	12.45	13.56	50
3¾	13.25	14.41	50
4	14.00	15.26	50
½ in. Diameter			
⅝	$ 6.55	5.27	100
¾	6.65	5.83	100
⅞	6.75	6.39	100
1	6.85	6.95	100
1¼	7.60	8.08	100
1½	8.35	9.21	100
1¾	9.10	10.33	100
2	9.80	11.46	100
2¼	10.60	12.59	50
2½	11.40	13.71	50
2¾	12.15	14.84	50
3	12.35	15.97	50
3¼	14.15	17.09	50
3½	15.35	18.22	50
3¾	16.60	19.35	50
4	17.85	20.47	50
9/16 in. Diameter			
¾	$11.15	7.79	100
⅞	11.35	8.51	100
1	11.55	9.23	100
1¼	11.75	10.67	100
1½	11.95	12.11	100
1¾	12.90	13.55	50
9/16 in. Diameter (Cont'd)			
2	$13.80	14.98	50
2¼	14.85	16.42	50
2½	16.00	17.86	50
2¾	17.15	19.30	50
3	18.25	20.73	50
3¼	19.75	22.17	50
3½	21.20	23.61	50
3¾	22.70	25.05	50
4	24.20	26.49	50
⅝ in. Diameter			
¾	$11.55	10.11	100
⅞	11.75	11.01	100
1	11.95	11.90	100
1¼	12.15	13.68	50
1½	12.35	15.46	50
1¾	13.30	17.24	50
2	14.20	19.02	50
2¼	15.30	20.81	50
2½	16.50	22.59	50
2¾	17.65	24.37	50
3	18.85	26.15	50
3¼	20.40	27.93	50
3½	21.90	29.72	50
3¾	23.30	31.50	50
4	24.85	33.28	50
4¼	25.40	35.02	25
4½	27.95	36.84	25
¾ in. Diameter			
1	$21.10	18.68	50
1¼	21.50	21.29	50
1½	21.90	23.90	50
1¾	22.30	26.57	50
2	22.70	29.12	50
2¼	24.40	31.73	25
2½	26.10	34.34	25
2¾	27.80	36.95	25
3	29.35	39.56	25
3¼	31.30	42.17	25
3½	33.20	44.78	25
¾ in. Diameter (Cont'd)			
3¾	$35.20	47.39	25
4	37.10	50.00	25
4¼	39.50	50.54	25
4½	41.85	55.22	25
4¾	44.35	57.86	25
⅞ in. Diameter			
1¼	$35.70	30.99	50
1½	36.20	34.57	50
1¾	36.70	38.16	50
2	37.20	41.74	50
2¼	39.80	45.33	25
2½	42.30	48.91	25
2¾	44.80	52.50	25
3	47.40	56.08	20
3¼	50.00	59.67	20
3½	52.80	63.25	20
3¾	55.60	66.84	20
4	58.25	70.42	20
4¼	61.15	73.94	20
4½	63.85	77.59	20
4¾	66.70	81.11	20
5	69.60	84.76	20
1 in. Diameter			
1½	$47.50	47.65	25
1¾	48.10	52.35	25
2	48.70	57.05	25
2¼	51.50	61.74	25
2½	53.35	66.44	25
2¾	57.20	71.13	25
3	59.85	75.83	20
3¼	63.25	80.53	20
3½	66.65	85.22	20
3¾	69.75	89.92	20
4	73.20	94.61	20
4¼	77.50	99.22	16
4½	82.15	104.01	16
4¾	86.40	108.62	16
5	90.85	113.40	16

Add for Each ¼ in. Longer Than Listed up to 6 in.

Diameter, in.	¼	5/16	⅜	7/16	½	9/16	⅝	¾	⅞	1
Per 100	$0.70	.90	1.30	1.60	2.00	2.40	3.20	4.00	6.40	8.80



STEEL STUDS

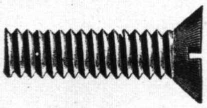
MILLED

Lgth., in.	Per 100	Wt. per 100, lbs.	No. in ctn.
⅜ in. Diameter			
1¼	$5.40	2.4	100
1½	5.60	3.2	100
1¾	5.85	3.9	100
2	6.10	4.7	100
2¼	6.35	5.5	100
2½	6.60	6.7	100
2¾	6.80	7	100
3	7.05	7.8	100
½ in. Diameter			
1¼	$7.05	4.3	100
1½	7.40	5.6	100
1¾	7.70	7	100
2	8.05	8.3	100
2¼	8.35	9.7	50
2½	8.65	11	50
½ in. Diameter (Cont'd)			
2¾	$ 9.00	12.4	50
3	9.30	13.7	50
3¼	9.65	15.1	50
3½	9.95	16.4	50
3¾	10.25	17.8	50
4	10.60	19.1	50
4¼	10.75	20.5	50
4½	10.90	21.8	50
4¾	11.20	23.2	50
5	11.55	24.5	50
⅝ in. Diameter			
1½	$10.10	9.2	50
1¾	10.40	11.3	50
⅝ in. Diameter (Cont'd)			
2	$10.75	13.5	50
2¼	11.05	15.6	50
2½	11.40	17.8	50
2¾	11.75	19.9	50
3	12.05	22	50
3¼	12.40	24.1	50
3½	12.75	26.3	50
3¾	13.05	28.4	50
4	13.40	30.5	50
4¼	13.65	32.6	50
4½	13.90	34.8	50
4¾	14.15	36.9	50
5	14.40	39	50
5½	14.85	43.3	50
6	15.35	47.5	50
¾ in. Diameter			
2	$15.40	19.8	50
2¼	15.95	22.8	50
2½	16.45	25.9	50
2¾	17.00	28.9	50
3	17.50	31.9	25
3¼	18.05	34.9	25
3½	18.60	38	25
3¾	19.10	41	25
4	19.60	44	25
4¼	20.05	47	25
4½	20.40	50.1	25
4¾	20.85	53.1	25
5	21.10	56.1	25
5½	22.00	62.2	25
6	22.75	68.2	25

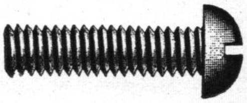
MACHINE SCREWS

FLAT, AND ROUND HEAD

(Specify Type Head on Orders)



Flat Head



Round Head

Thread Specifications

Diameter, Nos. or in.	2	4	6	8	10	12	¼	5/16	⅜
Threads per inch	**56**	**40**	**32**	**32**	**24**	**24**	**20**	**18**	**16**
	64	48	40	36	32	32	28	24	24

Coarse thread pitches shown in heavy type face are furnished regularly. Their use is recommended.

Fine thread pitches shown in light face type will be manufactured upon reasonable notice.

Round head screws are measured from under head; flat head are measured over all.

STEEL

Lgth., in.	Per gross	Wt. gross, lbs.
No. 2 Diameter		
⅛	$0.41	.05
3/16	.42	.06
¼	.43	.071
5/16	.44	.081
⅜	.45	.091
7/16	.46	.109
½	.47	.113
⅝	.49	.133
¾	.51	.153
⅞	.54	.174
No. 4 Diameter		
⅛	$0.43	.09
3/16	.44	.107
¼	.45	.127
5/16	.46	.140
⅜	.47	.157
7/16	.48	.174
½	.49	.191
⅝	.52	.225
¾	.55	.258
⅞	.57	.292
1	.61	.325
1⅛	.70	.358
1¼	.80	.393
1½	.90	.459
No. 6 Diameter		
⅛	$0.47	.159
3/16	.48	.186
¼	.49	.212
5/16	.50	.252
⅜	.51	.265
7/16	.52	.292
½	.54	.318
⅝	.57	.371
¾	.60	.424
⅞	.65	.478
1	.70	.530
1⅛	.80	.583
1¼	.90	.637
1½	1.00	.743
1¾	1.10	.849
2	1.20	.952
No. 8 Diameter		
3/16	$0.60	.295
¼	.62	.333
5/16	.64	.372
⅜	.66	.410
7/16	.68	.449
½	.70	.487
⅝	.74	.564
¾	.77	.640
⅞	.81	.718
1	.88	.795
1⅛	.96	.871
1¼	1.04	.898
No. 8 Diameter (Cont'd)		
1½	$1.16	1.10
1¾	1.28	1.26
2	1.40	1.41
2¼	1.55	1.58
2½	1.70	1.72
2¾	1.85	1.87
3	2.00	2.03
No. 10 Diameter		
3/16	$0.67	.438
¼	.69	.491
5/16	.71	.543
⅜	.73	.595
7/16	.75	.647
½	.77	.699
⅝	.82	.803
¾	.87	.906
⅞	.92	1.01
1	.98	1.11
1⅛	1.06	1.22
1¼	1.15	1.33
1½	1.30	1.53
1¾	1.45	1.73
2	1.60	1.95
2¼	1.80	2.15
2½	2.00	2.36
2¾	2.20	2.57
3	2.40	2.78
No. 12 Diameter		
¼	$0.83	.691
5/16	.86	.757
⅜	.89	.827
7/16	.92	.896
½	.95	.964
⅝	1.02	1.10
¾	1.08	1.24
⅞	1.14	1.38
1	1.20	1.51
1⅛	1.30	1.65
1¼	1.40	1.84
1½	1.55	2.06
1¾	1.70	2.34
2	1.85	2.61
2¼	2.05	2.88
2½	2.25	3.15
2¾	2.50	3.42
3	2.75	3.68
¼ in. Diameter		
5/16	$1.10	1.11
⅜	1.13	1.21
7/16	1.16	1.30
½	1.20	1.40
⅝	1.28	1.58
¾	1.36	1.78
⅞	1.45	1.95
¼ in. Diameter (Cont'd)		
1	$1.55	2.13
1⅛	1.65	2.32
1¼	1.75	2.52
1½	1.95	2.89
1¾	2.15	3.26
2	2.35	3.62
2¼	2.55	4.00
2½	2.80	4.37
2¾	3.10	4.75
3	3.40	5.12
⅜ in. Diameter		
½	$2.75	3.97
⅝	2.95	4.42
¾	3.10	4.86
⅞	3.30	5.31
1	3.50	5.76
1⅛	3.70	6.20
1¼	3.90	6.65
1½	4.30	7.54
1¾	4.70	8.43
2	5.10	9.33
2¼	5.60	10.22
2½	6.20	11.12
2¾	6.80	12.01
3	7.50	12.90

Packed one gross per carton; sold in gross lots per size.

BRASS

Lgth., in.	Per gross
No. 2 Diam.	
⅛	$0.48
3/16	.50
¼	.52
5/16	.54
⅜	.57
7/16	.60
½	.63
⅝	.69
¾	.75
⅞	.80
No. 4 Diam.	
⅛	$0.57
3/16	.60
¼	.63
5/16	.67
⅜	.71
7/16	.75
½	.79
⅝	.87
¾	.95
No. 4 Diam. (Cont'd)	
⅞	$1.05
1	1.15
1⅛	1.25
1¼	1.45
1½	1.75
No. 6 Diam.	
⅛	$0.70
3/16	.75
¼	.80
5/16	.85
⅜	.90
7/16	.96
½	1.02
⅝	1.14
¾	1.26
⅞	1.38
1	1.50
1⅛	1.65
1¼	1.85
No. 6 Diam. (Cont'd)	
1½	$2.10
1¾	2.40
2	2.70
No. 8 Diam.	
3/16	$1.10
¼	1.18
5/16	1.26
⅜	1.34
7/16	1.42
½	1.50
⅝	1.65
¾	1.80
⅞	1.95
1	2.10
1⅛	2.25
1¼	2.40
1½	2.80
1¾	3.20
2	3.60
No. 8 Diam. (Cont'd)	
2¼	$4.00
2½	4.40
2¾	4.80
3	5.20
No. 10 Diam.	
3/16	$1.40
¼	1.48
5/16	1.56
⅜	1.65
7/16	1.75
½	1.85
⅝	2.10
¾	2.30
⅞	2.50
1	2.75
1⅛	3.00
1¼	3.30
1½	3.75
1¾	4.20
No. 10 Diam. (Cont'd)	
2	$4.60
2¼	5.00
2½	5.50
2¾	6.00
3	6.50
No. 12 Diam.	
¼	$2.00
5/16	2.10
⅜	2.20
7/16	2.35
½	2.50
⅝	2.80
¾	3.00
⅞	3.30
1	3.60
1⅛	3.90
1¼	4.20
1½	4.70
1¾	5.30
2	5.90
No. 12 Diam. (Cont'd)	
2¼	$6.50
2½	7.10
2¾	7.70
3	8.30
¼ in. Diam.	
5/16	$2.90
⅜	3.10
7/16	3.30
½	3.50
⅝	3.90
¾	4.10
⅞	4.50
1	4.90
1⅛	5.30
1¼	5.60
1½	6.30
1¾	7.00
2	7.80
2¼	8.60
¼ in. Diam. (Cont'd)	
2½	$ 9.40
2¾	10.20
3	11.00
⅜ in. Diam.	
½	$ 9.40
⅝	10.20
¾	11.00
⅞	11.80
1	12.70
1⅛	13.60
1¼	14.50
1½	16.10
1¾	17.70
2	19.40
2¼	21.10
2½	22.90
2¾	24.70
3	26.50

Packed one gross per carton; sold in gross lots per size.

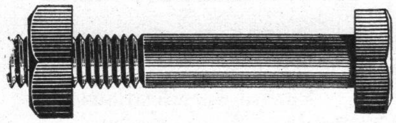
Note—For approximate weight of Brass Machine Screws add 8 per cent to the weight of steel screws shown above.

MACHINE BOLTS

STEEL

American Standard Coarse Threads

With American Standard Regular Square Heads.



Cut Thread

Lengths measured under head. Intermediate lengths take next higher list.

Machine Bolts stocked with American Standard Regular Hot Pressed Square Nuts and American Standard Heavy Cold Punched Nuts.

Only stock sizes listed, non-stock sizes available at extra cost.

¼ in. Diameter

Lgth., in.	Per 100	Wt. per 100, lbs.	No. in case
¾	$1.10	2.4	4000
1	1.15	2.7	3200
1¼	1.25	3.0	3200
1½	1.30	3.4	3400
2	1.50	4.0	3000
2½	1.70	4.7	2700
3	1.85	5.4	2400
3½	2.05	6.0	2000
4	2.50	6.7	2000
4½	2.65	7.4	1600
5	2.80	8.1	1300
5½	2.95	8.7	1200
6	3.10	9.4	1100
6½	3.80	10.1	1000
7	4.00	10.8	1000
8	4.35	12.1	1000

All sizes, 100 in a box.

5/16 in. Diameter

Lgth., in.	Per 100	Wt. per 100, lbs.	No. in case
¾	$1.70	4.4	2500
1	1.75	4.8	3000
1¼	1.80	5.3	2000
1½	1.95	5.8	2100
2	2.20	6.7	2000
2½	2.45	7.8	2400
3	2.70	8.9	2400
3½	2.95	9.9	1800
4	3.15	11.0	1400
4½	3.60	12.0	1300
5	3.80	13.0	1000
5½	4.00	14.0	800
6	4.20	15.0	900
6½	5.10	16.1	600
7	5.35	17.2	800
8	5.80	19.3	600

All sizes, fifty in a box.

⅜ in. Diameter

Lgth., in.	Per 100	Wt. per 100, lbs.	No. in case
¾	$2.25	6.9	2000
1	2.35	7.4	2800
1¼	2.45	8.2	2000
1½	2.60	8.8	2400
2	2.90	10.3	2000
2½	3.20	11.8	1800
3	3.50	13.3	1500
3½	3.80	14.8	1200
4	4.10	16.4	1200
4½	4.40	17.9	1000
5	4.80	19.2	900
5½	5.10	20.8	600
6	5.40	22.3	800
6½	6.50	23.8	500
7	6.85	25.3	600
7½	7.15	26.8	400
8	7.50	28.4	600
8½	7.80	29.9	400
9	8.15	31.4	500
9½	8.45	32.9	300
10	8.80	34.5	500
11	9.50	37.5	300
12	10.20	40.5	300

All sizes, fifty in a box.

7/16 in. Diameter

Lgth., in.	Per 100	Wt. per 100, lbs.	No. in case
1	$3.95	10.9	1000
1¼	4.10	11.8	700
1½	4.25	12.8	1000
2	4.55	14.5	1000
2½	4.85	16.5	900
3	5.20	18.6	900
3½	5.50	20.7	800
4	5.85	22.7	800
4½	$ 6.15	24.8	600
5	6.50	26.9	600
5½	6.85	29.0	400
6	7.15	31.1	500
6½	9.20	33.1	400
7	9.65	35.2	400
8	10.55	39.3	300
9	11.45	43.2	300

All sizes, fifty in a box.

½ in. Diameter

Lgth., in.	Per 100	Wt. per 100, lbs.	No. in case
1	$ 4.60	15.6	1200
1¼	4.80	16.7	1200
1½	5.00	18.0	1200
2	5.35	20.5	1000
2½	5.75	23.2	1000
3	6.15	25.9	800
3½	6.50	28.6	800
4	6.85	31.3	600
4½	7.25	34.0	600
5	7.65	36.7	600
5½	8.05	39.5	500
6	8.45	41.8	600
6½	10.15	44.5	400
7	10.60	47.2	400
7½	11.05	49.9	250
8	11.50	52.7	350
8½	11.95	55.4	200
9	12.40	58.1	300
9½	12.85	60.8	200
10	13.30	63.5	300
11	14.70	68.9	200
12	15.60	74.3	200
13	16.50	79.7	200
14	17.40	85.1	200
15	18.30	90.5	200
16	19.20	96.0	200
17	20.10	101	200
18	21.00	107	200
19	21.90	112	200
20	22.80	118	200
22	24.60	128	150
24	26.40	139	150

1 to 10 in. long, fifty; 11 and 12 in. long, twenty-five in a box; balance bulk.

⅝ in. Diameter

Lgth., in.	Per 100	Wt. per 100, lbs.	No. in case
1	$ 8.10	28.2	850
1¼	8.35	29.9	800
1½	8.60	31.9	800
2	9.10	35.9	600
2½	9.60	39.7	600
3	10.10	43.9	500
3½	10.60	48.1	400
4	11.10	52.4	400
4½	11.60	56.6	300
5	12.10	60.8	300
5½	12.60	65.0	275
6	13.10	69.2	250
6½	13.60	73.5	250
7	14.10	77.7	225
7½	14.60	81.9	225
8	15.10	85.7	200
8½	15.60	89.9	200
9	16.10	94.1	175
9½	16.60	98.3	175
10	17.10	103	150
11	18.10	111	150
12	19.10	119	125
13	20.10	128	125
14	21.10	136	100
15	$22.10	145	100
16	23.10	153	100
17	24.10	162	100
18	25.10	170	100
19	26.10	178	100
20	27.10	187	100
22	29.10	204	100
24	31.10	221	100

1 to 12 in. long, twenty-five in a box; balance bulk.

¾ in. Diameter

Lgth., in.	Per 100	Wt. per 100, lbs.	No. in case
1	$10.95	43.4	600
1¼	10.95	46.4	500
1½	10.95	48.8	475
2	11.60	54.3	425
2½	12.25	60.2	375
3	12.90	65.7	325
3½	13.55	71.8	275
4	14.20	77.9	275
4½	14.85	84.0	225
5	15.50	90.0	200
5½	16.15	96.1	200
6	16.80	102	175
6½	17.45	108	175
7	18.10	114	150
7½	18.75	120	150
8	19.40	126	125
8½	20.05	132	125
9	20.70	138	125
9½	21.35	144	125
10	22.00	150	125
11	23.30	162	100
12	24.60	174	100
13	25.90	186	100
14	27.20	199	100
15	28.50	211	100
16	29.80	223	100
17	31.10	235	100
18	32.40	247	100
19	33.70	259	100
20	35.00	271	100
22	37.60	296	70
24	40.20	320	70

All sizes, bulk.

⅞ in. Diameter

Lgth., in.	Per 100	Wt. per 100, lbs.	No. in case
1½	$16.70	74.6	300
2	17.60	81.7	275
2½	18.50	90.0	225
3	19.40	97.8	200
3½	20.30	106	190
4	21.20	114	150
4½	22.10	122	150
5	23.00	130	150
5½	23.90	138	130
6	24.80	147	130
6½	25.70	155	130
7	26.60	163	110
7½	27.50	172	100
8	28.40	180	100
8½	29.30	188	100
9	30.20	197	100
10	32.00	212	90
11	33.80	228	75
12	35.60	244	75
13	37.40	261	75
14	39.20	278	50
15	41.00	294	50
16	42.80	311	50
17	44.60	327	50
18	$46.40	344	50
19	48.20	360	50
20	50.00	377	50
22	53.60	410	50
24	57.20	443	50

1 in. Diameter

Lgth., in.	Per 100	Wt. per 100, lbs.	No. in case
2	$24.40	115	200
2½	25.55	125	180
3	26.70	136	150
3½	27.85	146	135
4	29.00	155	125
4½	30.15	166	110
5	31.30	177	110
5½	32.45	188	100
6	33.60	199	100
6½	34.75	209	80
7	35.90	220	80
7½	37.05	231	80
8	38.20	242	80
8½	39.35	253	75
9	40.50	263	75
10	42.80	284	60
11	45.10	306	50
12	47.40	326	50
13	49.70	348	50
14	52.00	370	50
15	54.30	391	50
16	56.60	413	50
17	58.90	435	50
18	61.20	456	50

1⅛ in. Diameter

Lgth., in.	Per 100	Wt. per 100, lbs.	No. in case
4	$48.50	209	90
4½	49.80	223	80
5	51.10	234	75
5½	52.40	248	70
6	53.70	262	65
7	56.30	290	60
8	58.90	317	55
9	61.50	344	50
10	64.10	372	45
11	66.70	400	45
12	69.30	427	40
13	71.90	454	40
14	74.50	481	40
15	77.10	509	40
16	79.70	534	40
17	82.30	560	40
18	84.90	588	40

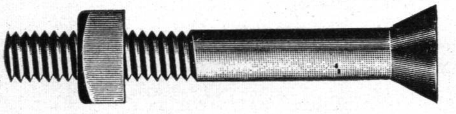
1¼ in. Diameter

Lgth., in.	Per 100	Wt. per 100, lbs.	No. in case
4	$57.75	278	70
4½	59.40	295	65
5	61.05	310	60
5½	62.70	327	55
6	64.35	343	55
7	67.65	376	50
8	70.95	409	45
9	74.25	443	45
10	77.55	477	40
11	80.85	510	40
12	84.15	544	30
13	87.45	578	30
14	90.75	612	30
15	94.05	645	30
16	97.35	679	30
17	100.65	712	30
18	103.95	746	25

All above sizes, bulk.

MACHINE BOLTS

STEEL



With Round Countersunk Heads and Round Necks

American Standard Regular Hot Pressed Nuts.
Cut thread.
Length is measured over all.

Length, in.	½ in. Diameter Per 100	½ in. Diameter Wt. per 100, lbs.	⅝ in. Diameter Per 100	⅝ in. Diameter Wt. per 100, lbs.	¾ in. Diameter Per 100	¾ in. Diameter Wt. per 100, lbs.
1¼	$6.30	16.7	$10.60	29.9	$14.20	45.1
1½	6.50	18.0	10.85	31.9	14.20	48.8
2	6.85	20.5	11.35	35.9	14.85	54.3
2½	7.25	23.2	11.85	39.7	15.50	60.2
3	7.65	25.9	12.35	43.9	16.15	65.7
3½	8.00	28.6	12.85	48.1	16.80	71.8

½ in., fifty; ⅝ in., twenty-five; ¾ in., bulk.

BOLT EXTRAS

HEADS OTHER THAN AMERICAN STANDARD REGULAR SQUARE

Gross Extras to Be Added to Machine Bolt List

Add, Per 100 Extra — Diameter, Inches

	¼	5/16	⅜	7/16	½	⅝	¾	⅞	1	1⅛	1¼
American Standard Regular Hexagon Heads	$0.15	$0.20	$0.30	$0.45	$0.65	$1.00	$1.40	$2.20	$3.00	$5.00	$7.00
American Standard Heavy (USS) Hexagon Heads	.30	.40	.60	.90	1.30	2.00	2.50	3.50	5.00	7.50	10.50

NUTS OTHER THAN AMERICAN STANDARD REGULAR SQUARE

Gross Extras to be Added to Machine, Carriage, Plow and Elevator Bolt Lists

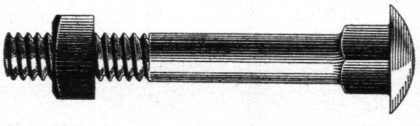
	¼	5/16	⅜	7/16	½	⅝	¾	⅞	1	1⅛	1¼
American Standard Heavy (USS) HP Hexagon Nuts	$0.30	$0.50	$0.80	$1.00	$1.10	$1.20	$1.70	$2.75	$3.80	$4.00	$5.30
American Standard Heavy (USS) CP Hexagon Nuts	.35	.50	.80	1.00	1.30	1.65	2.60	4.10	5.80	6.00	9.30
American Standard Heavy (USS) Semi-Finished Hexagon Nuts	.50	.70	1.00	1.25	1.60	2.20	3.30	4.80	6.70	7.10	10.70

CARRIAGE BOLTS

STEEL

American Standard Coarse Thread

American Standard Oval Heads; American Standard Regular Square Nuts.



Cut Thread

Length measured under head. Intermediate lengths take next higher list.

Only stock sizes listed; non-stock sizes available at extra cost.

3/16 in. Diameter

Lgth., in.	Per 100	Wt. per 100, lbs.	No. in case
¾	$1.05	1.25	1500
1	1.10	1.40	3800
1¼	1.15	1.59	3600
1½	1.20	1.77	4200
2	1.35	2.14	3200
2½	1.55	2.52	3600
3	1.70	2.87	3200
3½	1.85	3.24	2400
4	2.30	3.61	2200

All sizes, 100 in a box.

¼ in. Diameter

Lgth., in.	Per 100	Wt. per 100, lbs.	No. in case
¾	$1.05	2.4	1500
1	1.10	2.7	3000
1¼	1.15	3.0	4200
1½	1.20	3.4	2800
2	1.35	4.1	4500
2½	1.55	4.4	5000
3	1.70	5.3	3600
3½	1.85	6.0	2400
4	2.30	6.6	2200
4½	2.45	7.3	2000
5	2.60	7.9	1600
5½	2.75	8.6	1200
6	2.90	9.3	1100
6½	3.65	9.9	1000
7	3.85	10.6	1000
7½	4.00	11.3	800
8	4.20	11.9	1000

All sizes, 100 in a box.

5/16 in. Diameter

Lgth., in.	Per 100	Wt. per 100, lbs.	No. in case
¾	$1.60	4.0	2400
1	1.65	4.5	2300
1¼	1.70	5.0	2100
1½	1.80	5.5	3000
2	2.00	6.5	2700
2½	2.25	7.5	2800
3	2.50	8.6	2400
3½	2.75	9.6	2000
4	2.95	10.6	1800
4½	3.40	11.7	1600
5	3.60	12.5	1200
5½	3.85	13.6	900
6	4.05	14.6	900
6½	$4.90	15.6	600
7	5.15	16.7	800
7½	5.35	17.7	500
8	5.60	18.7	700
8½	5.80	19.8	500
9	6.05	20.8	500
10	6.50	22.9	500

All sizes, fifty in a box.

⅜ in. Diameter

Lgth., in.	Per 100	Wt. per 100, lbs.	No. in case
¾	$2.00	6.5	1800
1	2.10	7.1	1700
1¼	2.20	7.9	1500
1½	2.35	8.5	2400
2	2.60	10.1	2000
2½	2.90	11.5	2100
3	3.20	13.0	2000
3½	3.50	14.5	1800
4	3.80	16.0	1600
4½	4.10	17.5	1200
5	4.50	18.8	1200
5½	4.80	20.3	900
6	5.10	21.8	1000
6½	6.30	23.2	700
7	6.65	24.7	800
7½	6.95	26.2	500
8	7.30	27.1	700
8½	7.60	29.2	400
9	7.95	30.7	500
9½	8.25	32.2	300
10	8.60	33.7	600
11	9.30	36.6	300
12	10.00	39.6	250

All sizes, fifty in a box.

7/16 in. Diameter

Lgth., in.	Per 100	Wt. per 100, lbs.	No. in case
1	$3.50	10.5	900
1¼	3.60	11.3	700
1½	3.75	12.4	900
2	4.05	14.2	1000
2½	4.40	16.2	1000
3	4.75	18.3	900
3½	5.10	20.3	800
4	5.40	22.3	800
4½	$5.75	24.3	600
5	6.10	26.3	600
5½	6.45	28.4	450
6	6.80	30.1	500
6½	8.25	32.1	400
7	8.70	34.1	400
7½	9.15	36.2	300
8	9.60	38.2	300
9	10.50	43.0	300
10	11.40	47.0	200

All sizes, fifty in a box.

½ in. Diameter

Lgth., in.	Per 100	Wt. per 100, lbs.	No. in case
1	$4.25	14.5	800
1¼	4.40	15.8	600
1½	4.60	17.1	1000
2	4.95	19.5	1000
2½	5.35	22.2	1000
3	5.75	24.8	1000
3½	6.15	27.5	900
4	6.55	30.1	800
4½	6.95	32.7	600
5	7.35	35.4	600
5½	7.80	38.0	500
6	8.20	40.4	600
6½	9.75	43.1	400
7	10.20	45.7	500
7½	10.65	48.4	400
8	11.10	51.0	400
8½	12.05	53.7	400
9	12.50	56.3	300
9½	12.95	59.0	250
10	13.40	61.6	350
10½	14.30	64.3	200
11	14.30	66.9	200
12	15.20	72.2	200
13	16.10	77.5	200
14	17.00	82.8	200
15	17.90	88.1	200
16	18.80	93.3	200
18	20.60	104	200

1 to 8 in. long, fifty; 8½ to 12 in. long twenty-five in a box; balance bulk.

⅝ in. Diameter

Lgth., in.	Per 100	Wt. per 100, lbs.	No. in case
1½	$8.60	29.5	800
2	9.10	33.5	600
2½	9.60	37.5	550
3	10.10	41.5	450
3½	10.60	45.7	400
4	11.10	49.8	400
4½	11.60	53.9	300
5	12.10	58.1	300
5½	12.60	62.2	300
6	13.10	66.3	250
6½	13.60	70.5	250
7	14.10	74.6	225
7½	14.60	78.7	200
8	15.10	82.4	200
9	16.10	90.6	150
10	17.10	98.9	150
11	18.10	107	100
12	19.10	115	100

1½ to 8 in. long, twenty-five in a box; balance bulk.

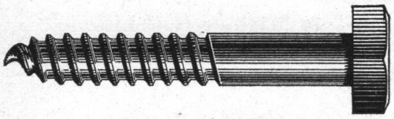
¾ in. Diameter

Lgth., in.	Per 100	Wt. per 100, lbs.	No. in case
2	$13.10	49.8	400
2½	13.75	55.5	350
3	14.40	60.9	300
3½	15.05	66.9	275
4	15.70	72.8	250
4½	16.35	78.8	225
5	17.00	84.7	200
5½	17.65	90.7	200
6	18.30	96.4	175
6½	18.95	103	150
7	19.60	109	150
7½	20.25	114	150
8	20.90	120	125
8½	21.50	126	125
9	22.20	132	125
10	23.50	144	100

All sizes, bulk.

LAG SCREWS OR BOLTS

STEEL



American Standard Regular Square Heads
Gimlet Points

Only stock sizes listed; non-stock sizes available at extra cost.

Lgth., in.	Per 100	Wt. per 100, lbs.	No. in case
¼ in. Diameter			
1	$2.35	1.67	5200
1½	2.15	2.16	3800
2	2.35	2.66	3600
2½	2.55	3.34	3600
3	2.80	3.78	3300
3½	3.05	4.46	2600
4	3.30	4.90	2400
4½	3.55	5.58	2400
5	3.80	6.01	2000
6	4.35	7.12	1500
1 to 4 in. long, 100 in a box; balance bulk.			
5/16 in. Diameter			
1	$2.35	2.90	4600
1½	2.15	3.79	4200
2	2.35	4.58	2500
2½	2.55	5.65	3000
3	2.80	6.35	2200
3½	3.05	7.41	1600
4	3.30	8.12	1200
4½	3.55	9.18	1200
5	3.80	9.87	1000
5½	4.05	10.9	1000
6	4.35	11.6	900
All sizes, 100 in a box.			
⅜ in. Diameter			
1	$2.85	4.40	2100
1½	2.60	5.51	2200
2	2.85	6.56	3000
2½	3.10	8.05	2100
3	3.40	9.10	2100
3½	3.70	10.6	1500
4	4.00	11.6	1600
4½	4.30	13.1	1200
5	4.65	14.1	1200
5½	5.00	15.6	700
6	5.35	16.6	900
8	6.75	21.6	800
All sizes, fifty in a box.			
7/16 in. Diameter			
1½	$3.90	7.92	1600
2	3.55	9.51	1200
2½	3.90	11.3	1000
3	4.30	13.0	1000
3½	4.70	15.0	700
4	5.10	16.5	600
4½	5.50	18.6	500
5	5.90	19.9	500
6	6.70	23.4	500
All sizes, fifty in a box.			
½ in. Diameter			
1½	$4.85	11.2	900
2	4.45	13.3	1100
2½	4.85	15.6	1200
3	5.30	17.8	1100
3½	5.75	20.5	800
4	6.20	22.3	900
4½	6.65	25.0	700
5	7.10	26.9	600
5½	7.55	29.6	400
6	8.00	31.4	500
6½	8.45	34.1	400
7	8.90	35.9	500
8	9.80	40.5	400
9	10.70	45.0	300
10	11.60	49.9	300
All sizes, fifty in a box.			
⅝ in. Diameter			
2	$7.40	23.2	500
2½	6.85	26.8	400
3	7.50	30.4	600
3½	8.15	34.6	500
4	8.80	37.6	600
4½	9.45	41.8	300
5	10.10	44.7	400
⅝ in. Diameter (Cont'd)			
5½	$10.75	48.9	375
6	11.40	51.9	400
7	12.70	59.0	375
8	14.00	66.2	250
9	15.20	73.4	225
10	16.40	81.1	250
11	17.70	88.9	250
12	19.00	96.1	200
2 to 8 in. long, fifty in a box; balance bulk.			
¾ in. Diameter			
2½	$11.00	41.8	250
3	11.90	47.1	350
3½	12.80	53.1	300
4	13.70	57.5	400
4½	14.60	63.6	250
5	15.50	68.0	300
6	17.30	78.4	225
7	19.10	88.9	250
8	20.90	99.3	200
9	22.65	110	200
10	24.40	121	175
11	26.25	133	150
12	28.10	143	150
All sizes bulk.			

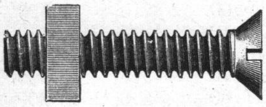
STOVE BOLTS

STEEL, FLAT AND ROUND HEAD

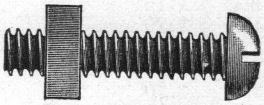
Specify Type Head On Order

American Standard Coarse Thread, Square Nuts

Length of flat head bolts measured over all; round head measured under head.



Flat Head



Round Head

Lgth., in.	Per 100	Wt. per 100, lbs.	No. in ctn.
⅛ in. Diameter			
⅜	$0.86	.41	100
½	.88	.45	100
⅝	.90	.48	100
¾	.92	.51	100
⅞	.95	.54	100
1	1.00	.57	100
1⅛	1.05	.60	100
1¼	1.10	.64	100
1⅜	1.15	.67	100
1½	1.20	.70	100
1¾	1.30	.76	100
2	1.45	.83	100
5/32 in. Diameter			
⅜	$0.95	.63	100
½	.97	.69	100
⅝	.99	.75	100
¾	1.02	.80	100
⅞	1.06	.86	100
1	1.10	.92	100
5/32 in. Diam. (Cont'd)			
1⅛	$1.15	.97	100
1¼	1.20	1.03	100
1⅜	1.25	1.08	100
1½	1.30	1.14	100
1¾	1.45	1.25	100
2	1.60	1.37	100
3/16 in. Diameter			
⅜	$1.00	.82	100
½	1.04	.89	100
⅝	1.08	.96	100
¾	1.12	1.04	100
⅞	1.16	1.11	100
1	1.20	1.18	100
1⅛	1.25	1.25	100
1¼	1.30	1.33	100
1⅜	1.35	1.40	100
1½	1.40	1.47	100
1¾	1.55	1.62	100
2	1.75	1.76	100
3/16 in. Diam. (Cont'd)			
2¼	$1.90	1.91	100
2½	2.10	2.05	100
2¾	2.25	2.20	100
3	2.45	2.34	100
3½	2.80	2.63	100
4	3.15	2.92	100
¼ in. Diameter			
½	$1.55	1.74	100
⅝	1.60	1.87	100
¾	1.65	2.00	100
⅞	1.70	2.13	100
1	1.75	2.26	100
1⅛	1.80	2.39	100
1¼	1.90	2.52	100
1⅜	1.95	2.65	100
1½	2.05	2.78	100
1¾	2.20	3.04	100
2	2.40	3.30	100
2¼	2.65	3.56	100
¼ in. Diameter (Cont'd)			
2½	$2.90	3.82	100
2¾	3.15	4.08	100
3	3.40	4.34	100
3½	3.90	4.86	100
4	4.40	5.38	100
5/16 in. Diameter			
¾	$2.60	3.70	100
⅞	2.70	3.88	100
1	2.80	4.09	100
1⅛	2.90	4.29	100
1¼	3.00	4.50	100
1⅜	3.10	4.71	100
1½	3.20	4.92	100
1¾	3.50	5.33	100
2	3.80	5.75	100
2¼	4.10	6.17	100
2½	4.40	6.58	50
2¾	4.70	7.00	50
3	5.00	7.42	50
5/16 in. Diam. (Cont'd)			
3½	$5.50	8.25	50
4	6.20	9.08	50
⅜ in. Diameter			
¾	$3.80	5.47	50
⅞	3.90	5.78	50
1	4.00	6.09	50
1⅛	4.15	6.39	50
1¼	4.30	6.70	50
1⅜	4.45	7.00	50
1½	4.60	7.31	50
1¾	4.90	7.92	50
2	5.20	8.53	50
2¼	5.60	9.14	50
2½	6.00	9.75	50
2¾	6.40	10.4	50
3	6.80	11.0	50
3½	7.60	12.2	50
4	8.40	13.4	50

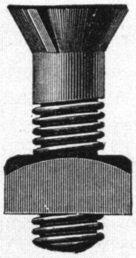
Diameter, in.	⅛	5/32	3/16	¼	5/16	⅜
Add for Hexagon Nuts, per 100	$0.08	.10	.12	.15	.21	.30

SPECIAL BOLTS

We can furnish bolts of any desired diameters and lengths with any type head and end.

Send Us Your Orders

PLOW BOLTS

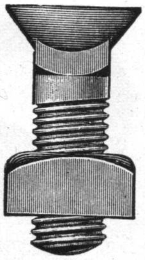


No. 1—Round Countersunk Key Head

American Standard Coarse (USS) Threads

With American Standard regular square nuts.

Length is measured over all.

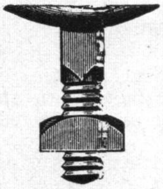


No. 3—Round Countersunk Square Neck

Lgth., in.	Per 100	Wt. per 100, lbs.	No. in ctn.
	⅜ in. Diameter		
1	$2.60	6.82	50
1¼	2.75	7.52	50
1½	2.90	8.22	50
1¾	3.05	8.90	50
2	3.20	9.62	50
2½	3.50	11.02	50
3	4.00	12.42	50
	7/16 in. Diameter		
1	$3.55	10.00	50
1¼	3.75	11.00	50
1½	4.00	12.00	50
1¾	4.25	13.00	50
2	4.50	14.00	50

Lgth., in.	Per 100	Wt. per 100, lbs.	No. in ctn.
	7/16 in. Diameter (Cont'd)		
2½	$5.00	16	50
3	5.65	18	50
	½ in. Diameter		
1	$5.00	14.87	50
1¼	5.25	16.17	50
1½	5.50	17.47	50
1¾	5.75	18.77	50
2	6.00	20.07	50
2½	6.50	22.67	50
3	7.25	25.27	50
	⅝ in. Diameter		
2	$11.60	29.88	25
2½	12.40	33.88	25
3	13.20	37.88	25

ELEVATOR BOLTS



No. 1—Flat Countersunk Head

American Standard Coarse (USS) threads.

With finished points and regular square nuts.

Lgth., in.	Per 100	Wt. per 100, lbs.
	¼ in. Diameter	
¾	$3.30	2.5
⅞	3.45	2.7
1	3.45	2.8
1¼	3.60	3.0
1½	3.75	3.3
1¾	3.90	3.5
2	4.05	3.8

100 in a box.

Lgth., in.	Per 100	Wt. per 100, lbs.
	5/16 in. Diameter	
¾	$4.50	4.5
⅞	4.75	4.7
1	4.75	4.9
1¼	5.00	5.3
1½	5.25	5.7
1¾	5.50	6.2
2	5.75	6.6

50 in a box.

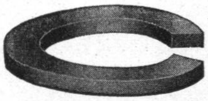
Lgth., in.	Per 100	Wt. per 100, lbs.
	⅜ in. Diameter	
1	$6.40	7.3
1¼	6.80	7.8
1½	7.20	8.5
1¾	7.60	9.1
2	8.00	9.7

50 in a box.

We also stock galvanized bolts, pole line hardware etc. such as used by Public Service Companies and Power Distribution Companies. Send us your orders.

LOCK WASHERS

PLAIN PATTERN



American Standard (ASA) Class M Medium Sizes

Heat treated steel. Holds nuts and screws absolutely tight.

For bolt, in.	Per 1000	Steel section, in. Width Thick.	No. in std. pkg.	Wt. per 1000, lbs.
3/16	$ 2.00	.062 x .047	1000	.79
¼	2.95	.109 x .062	1000	2.59
5/16	4.55	.125 x .078	1000	4.45
⅜	5.90	.141 x .094	1000	7.00
7/16	8.35	.156 x .109	1000	10.21
½	11.45	.171 x .125	1000	14.36
9/16	15.95	.188 x .141	500	19.76
⅝	19.20	.203 x .156	500	25.87
¾	32.45	.234 x .188	500	42.93
⅞	46.80	.266 x .219	500	67.39
1	77.00	.297 x .250	100	96.62
1⅛	125.55	.328 x .281	100	133.0
1¼	170.35	.359 x .312	100	178.0
1⅜	226.70	.391 x .344	100	234.0
1½	278.70	.422 x .375	100	297.0

JUNIOR GARAGE ASSORTMENT

JUNIOR GARAGE ASSORTMENT
LOCK WASHERS
3/16
1/4
5/16
3/8
1/2
7/16
9/16

Assortment contains approximately 425 assorted lock washers ranging in size from 3/16 to 9/16 in. Put up in a partitioned card box.

Per assortment

No. 425—Wt. per assortment 2 lbs. $1.75

One assortment in a box.

HANDY ASSORTMENT

ASSORTED
LOCK
WASHERS
MADE IN U.S.A.

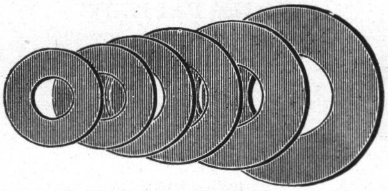
Assortment consists of 39 assorted lock washers ranging in size from 3/16 to ⅝ in. Put up in a screw top all metal can.

Per assortment

No. 39—Wt. per assortment ⅕ lb. $0.25

Open stock.

WROUGHT STEEL WASHERS



U. S. Standard Sizes

Made from clear stock; true as to size and weight; packages contain no scrap. Plain finish.

Standard List **In 200 Pound Kegs**

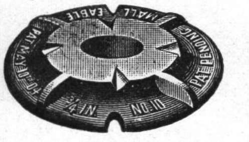
For bolt, in.	Per 100 lbs.	OD., in.	Size hole, in.	Thickness ga.	Thickness in.	App. No. in 100 lbs.	Wt. per 1000, lbs.
3/16	$14.00	9/16	¼	18	3/64	36200	2.76
¼	12.20	¾	5/16	16	1/16	14900	6.7
5/16	11.70	⅞	⅜	16	1/16	9000	11.1
⅜	11.00	1	7/16	14	5/64	6700	15.0
7/16	11.00	1¼	½	14	5/64	4100	24.5
½	10.80	1⅜	9/16	12	7/64	2600	38.5
⅝	10.40	1¾	11/16	10	9/64	1300	77.0
¾	10.30	2	13/16	9	5/32	910	110.0
⅞	10.30	2¼	15/16	8	11/64	652	153.5
1	10.30	2½	1 1/16	8	11/64	532	188.0
1⅛	10.30	2¾	1¼	8	11/64	445	221.0
1¼	10.60	3	1⅜	8	11/64	384	261.0
1⅜	10.60	3¼	1½	7	3/16	300	333.0
1½	10.60	3½	1⅝	7	3/16	260	385.0
1¾	10.60	4	1⅞	7	3/16	200	500.0
2	10.60	4½	2⅛	7	3/16	159	629.0

Extras on Wrought Steel Washers

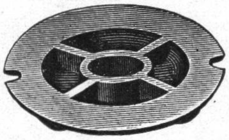
Add—$0.50 per package less than 200 pound kegs.
Add— 2.00 per cwt. for 5 pound paper boxes.
Add— 3.25 per cwt. for 1 pound paper boxes.

MALLEABLE IRON WASHERS

STANDARD



Top View



Bottom View

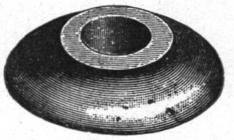
No. 10—Western Pattern, With Nut Locking Feature

Made of high grade malleable iron and are about 400 per cent stronger than cast iron, yet weigh only about one-third as much. A burr is easily turned up to lock the nut effectively.

For bolt, in.	Per 100 lbs.	OD, in.	Size of hole, in.	Thick., in.	Wt. per 100, lbs.
½	$51.00	2½	9/16	¼	19½
⅝	57.00	2¾	11/16	5/16	25½
¾	44.50	3	13/16	7/16	33
⅞	41.20	3½	15/16	7/16	54
1	39.60	4	1 1/16	½	73

200 pounds in a keg.

CAST IRON WASHERS



O. G. Pattern

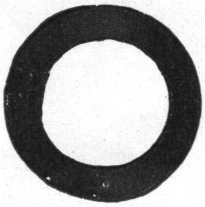
Best quality gray cast iron, natural smooth finish.

Bolt size, in.	Per 100	Hole size, in.	Diam. top, in.	Thick., in.	Diam. bottom, in.
½	$15.80	⅝	1⅜	⅜	1 15/16
⅝	17.30	¾	1⅝	⅝	2½
¾	25.50	⅞	1 13/16	¾	2⅞
⅞	29.50	1	2	⅞	3½
1	30.30	1⅛	2 5/16	15/16	3¾

Open stock.

MACHINERY BUSHINGS

MILD STEEL



Used on all mowers, wheat and corn binders, hay rakes, listers, threshing machines, windmills and all other farm machinery and automobiles.

Per assortment

No. 56—Assortment, contains two each of the 21 sizes ⅝ in. ID to 1¾ in. ID inclusive, also 14 extra bushings of sizes ⅝ in. ID to 1¼ in. ID inclusive making a total of 56 bushings; wt. per assortment 1⅞ lbs. $1.00

One assortment in a box.

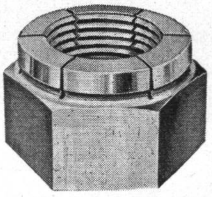
Regular Stock

Hole, in.	Per 100	Ga. No.	Wt. 100, lbs.	Hole, in.	Per 100	Ga. No.	Wt. 100, lbs.
⅝	$1.00	18	.95	1⅜	$ 6.00	18	2.90
¾	1.50	18	1.10	1⅜	7.00	14	4.75
¾	2.00	14	1.70	1⅜	8.00	10	8.20
⅞	2.00	18	1.25	1½	7.00	14	5.10
⅞	2.50	14	1.95	1½	9.00	10	8.40
1	2.50	18	1.36	1¾	8.00	14	5.90
1	3.00	14	2.25	1¾	10.00	10	9.70
1	3.50	10	3.85	1⅞	10.00	14	8.05
1⅛	3.00	18	2.10	1⅞	14.00	10	14.50
1⅛	4.00	14	3.30	2	12.00	14	8.50
1⅛	5.00	10	5.60	2	16.00	10	15.25
1¼	4.00	18	2.15	2⅛	14.00	14	8.90
1¼	5.00	14	3.50	2⅛	18.00	10	16.
1¼	6.00	10	6.	2¼	16.00	14	10.
				2¼	20.00	10	17.

100 in a box.

SELF-LOCKING NUTS

"FLEXLOC" HEXAGON C. F.



Regular Height; Cadmium Plated

Here is a locknut that can be subjected to incessant and pronounced vibration. It is a self-contained unit costing no more than an ordinary nut and lock washer or castellated nut and cotter pin.

"Flexloc" can be used as either a stop or lock nut as it will lock in any position on a threaded companion member. Also, it can be used over and over again because of the springlike quality of the locking threads.

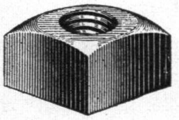
Impervious to the action of oil and gas.

Hexagon dimensions, ¼ to 1 in., conform to American Standard Regular.

For bolt, in.	Per 100	Width in.	Width across corners, in.	Height, in.	Wt. per 1000, lbs.	No. in a carton
National Coarse (USS) Threads						
¼	$ 2.60	7/16	.505	9/32	7.8	100
5/16	3.34	9/16	.649	5/16	14,4	100
⅜	4.54	⅝	.722	⅜	21.0	100
7/16	5.92	¾	.866	7/16	35.6	100
½	8.28	13/16	.938	½	46.9	100
⅝	14.28	1	1.155	⅝	90.0	50
¾	19.66	1⅛	1.299	¾	132.8	50
⅞	27.20	1 5/16	1.516	⅞	216.6	25
1	39.40	1½	1.732	1	314.4	25
National Fine (SAE) Threads						
¼	$ 2.20	7/16	.505	5/16	8.6	100
5/16	2.84	½	.577	11/32	11.7	100
⅜	3.52	9/16	.649	29/64	18.6	100
7/16	4.08	⅝	.722	29/64	22.0	100
½	5.94	¾	.866	19/32	43.6	100
9/16	8.22	⅞	1.010	11/16	72.1	50
⅝	11.22	15/16	1.082	¾	86.3	50
¾	14.12	1 1/16	1.227	⅞	123.0	50
1	29.82	1 7/16	1.660	1⅛	286.0	25

HOT PRESSED NUTS

SQUARE, TAPPED



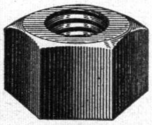
American Standard Heavy (USS)

Tapped American Standard Coarse (USS) Thread Series.

Standard List in 200 Pound Kegs

For bolt, in.	Per 100	Width, in.	Thickness, in.	Threads per in.	No. in keg	Wt. per 1000, lbs.
¼	$ 0.55	½	¼	20	14000	14
5/16	.75	19/32	5/16	18	8400	24
⅜	1.05	11/16	⅜	16	5000	38
7/16	1.50	25/32	7/16	14	3150	57
½	2.00	⅞	½	13	2800	80
9/16	2.30	15/16	9/16	12	2000	107
⅝	2.70	1 1/16	⅝	11	1500	144
¾	3.80	1¼	¾	10	900	231
⅞	6.10	1 7/16	⅞	9	550	354
1	8.30	1⅝	1	8	450	514
1⅛	11.90	1 13/16	1⅛	7	300	716
1¼	15.60	2	1¼	7	225	997
1⅜	21.00	2 3/16	1⅜	6	175	1313
1½	28.15	2⅜	1½	6	130	1675
1⅝	40.85	2 9/16	1⅝	5½	100	2100
1¾	52.50	2¾	1¾	5	80	2590
2	78.60	3⅛	2	4½	55	3810

HEXAGON, TAPPED



American Standard Heavy (USS)

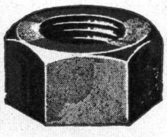
Tapped American Standard Coarse (USS) Thread Series.

Standard List in 200 Pound Kegs

For bolt, in.	Per 100	Width, in.	Thickness, in.	Threads per in.	No. in keg	Wt. per 1000, lbs.
¼	$ 0.65	½	¼	20	15000	12
5/16	.90	19/32	5/16	18	9000	20
⅜	1.20	11/16	⅜	16	6000	32
7/16	1.75	25/32	7/16	14	3600	47
½	2.25	⅞	½	13	3300	67
9/16	2.55	15/16	9/16	12	2300	90
⅝	3.00	1 1/16	⅝	11	1800	119
¾	4.30	1¼	¾	10	1000	192
⅞	6.80	1 7/16	⅞	9	650	292
1	9.30	1⅝	1	8	500	423
1⅛	13.10	1 13/16	1⅛	7	350	585
1¼	17.35	2	1¼	7	270	812
1⅜	23.30	2 3/16	1⅜	6	200	1053
1½	31.30	2⅜	1½	6	150	1365
1⅝	45.40	2 9/16	1⅝	5½	120	1710
1¾	58.30	2¾	1¾	5	95	2120
1⅞	76.80	2 15/16	1⅞	5	80	2560
2	85.15	3⅛	2	4½	65	3085

COLD PUNCHED NUTS

HEXAGON, TAPPED



American Standard Heavy (USS)

Tapped American Standard Coarse (USS) Thread Series.

Width, thickness and threads per inch same as for hexagon hot pressed nuts.

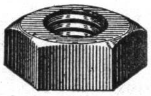
Standard List in 200 Pound Kegs

For bolt, in.	Per 100	No. in keg	Wt. per 1000, lbs.	For bolt, in.	Per 100	No. in keg	Wt. per 1000, lbs.
¼	$0.65	15000	12	1	$ 11.15	500	423
5/16	.90	9000	20	1⅛	15.55	350	585
⅜	1.20	6000	32	1¼	21.40	270	812
7/16	1.75	3600	47	1⅜	28.80	200	1053
½	2.25	3300	67	1½	38.70	150	1365
9/16	3.10	2300	90	1⅝	56.05	120	1710
⅝	3.60	1800	119	1¾	75.70	95	2120
¾	5.10	1000	192	1⅞	94.95	80	2560
⅞	8.00	650	292	2	112.90	65	3085

Note—Nuts in cartons or small packages take 15% higher list.
Nuts with left hand thread, prices on application.
Tapping other than American Standard coarse thread Class 2, prices on application.

COLD PUNCHED JAM NUTS

HEXAGON, TAPPED



American Standard Heavy (USS)

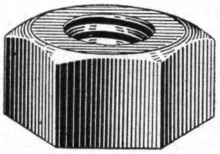
Tapped American Standard Coarse (USS) Thread Series.

Standard List in 200 Pound Kegs

For bolt, in.	Per 100	Width, in.	Thickness, in.	Threads per in.	No. in keg	Wt. per 1000, lbs.
¼	$0.60	½	3/16	20	22000	9.2
5/16	.80	19/32	7/32	18	12500	14.3
⅜	1.10	11/16	¼	16	9000	21.5
7/16	1.60	25/32	9/32	14	5700	30.7
½	1.90	⅞	5/16	13	5300	42.8
9/16	2.60	15/16	11/32	12	3600	55.6
⅝	2.80	1 1/16	⅜	11	3000	77.3
¾	4.60	1¼	7/16	10	1800	114.0
⅞	6.40	1 7/16	½	9	1200	171.0
1	8.50	1⅝	9/16	8	850	242.0

SEMI-FINISHED NUTS

HEXAGON, TAPPED



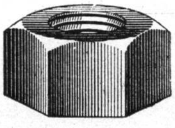
American Standard Heavy (USS)

Tapped American Standard Coarse (USS) Thread Series.

Cold punched.

Standard List in Cartons

For bolt, in.	Per 100	Width, in.	Thickness, in.	Threads per in.	No. in a ctn.	Wt. per 100, lbs.
¼	$0.86	½	¼	20	100	1.2
5/16	1.15	19/32	5/16	18	100	2.0
⅜	1.55	11/16	⅜	16	100	3.2
7/16	2.19	25/32	7/16	14	50	4.7
½	2.76	⅞	½	13	50	6.7
9/16	3.80	15/16	9/16	12	50	9.0
⅝	4.60	1 1/16	⅝	11	50	11.9
¾	6.56	1¼	¾	10	50	19.2
⅞	10.06	1 7/16	⅞	9	25	29.2
1	13.80	1⅝	1	8	25	42.3



American Standard Light (SAE)

Tapped American Standard Light (SAE) Thread Series.

Standard List in Cartons

For bolt, in.	Per 100	Width, in.	Thickness, in.	Threads per in.	No. in a ctn.	Wt. per 100, lbs.
¼	$0.75	7/16	7/32	28	100	.7
5/16	.86	½	17/64	24	100	1.1
⅜	1.09	9/16	21/64	24	100	1.5
7/16	1.50	⅝	⅜	20	50	2.1
½	1.90	¾	7/16	20	50	3.6
9/16	2.88	⅞	31/64	18	50	5.6
⅝	3.68	15/16	35/64	18	50	6.9
¾	5.75	1 1/16	21/32	16	50	9.9
⅞	9.20	1¼	29/64	14	25	16.2
1	13.34	1 7/16	⅞	14	25	24.5

Note

In ordering, nuts should be specified in the order shown below in the following examples so as to avoid any possible misunderstanding:

1—Diameter and threads, as ½ in.-13.

2—Nut series and style, as Regular.

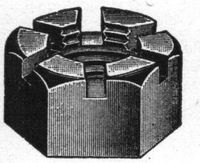
3—Type of finish or method of manufacture, as Cold Punched.

4—Shape, as Hex.

Abbreviations—½ in.-13 Reg. C.P. Hex. Nuts.

SEMI-FINISHED NUTS

HEXAGON SLOTTED, TAPPED



American Standard Heavy (USS)

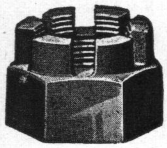
Milled from bar.

Tapped American Standard Coarse (USS) Thread Series.

Standard List in Cartons

For bolts, in.	Per 100	Width, in.	Thickness, in.	Slots in Width	Slots in Depth	Threads per inch	No. in a carton	Wt. per 100, lbs.
¼	$ 0.92	½	15/16	5/64	3/32	20	100	1.24
5/16	1.15	19/32	19/64	3/32	3/32	18	100	2.17
⅜	1.44	11/16	23/64	⅛	⅛	16	100	3.3
7/16	1.90	25/32	27/64	⅛	5/32	14	50	4.98
½	2.30	⅞	31/64	5/32	5/32	13	50	6.9
9/16	3.57	15/16	35/64	3/16	7/32	12	50	9.5
⅝	4.14	1 1/16	39/64	3/16	¼	11	50	12.6
¾	5.75	1¼	47/64	3/16	¼	10	50	21.0
⅞	8.51	1 7/16	55/64	3/16	¼	9	25	31.6
1	12.65	1⅝	63/64	¼	9/32	8	25	47.4

HEXAGON CASTELLATED, TAPPED



American Standard Light (SAE)

Milled from bar.

Tapped American Standard Light (SAE) Thread Series.

Standard List in Cartons

For bolt, in.	Per 100	Width, in.	Thickness, in.	Threads per inch	No. in a carton	Wt. per 100, lbs.
¼	$ 1.32	7/16	9/32	28	100	.75
5/16	1.55	½	21/64	24	100	1.1
⅜	1.84	9/16	13/32	24	100	1.52
7/16	2.30	⅝	29/64	20	50	2.11
½	3.28	¾	9/16	20	50	3.83
9/16	4.83	⅞	39/64	18	50	5.92
⅝	5.64	15/16	23/32	18	50	7.11
¾	8.97	1 1/16	13/16	16	50	10.6
⅞	12.36	1¼	29/32	14	25	17.1
1	18.40	1 7/16	1	14	25	25.3

Note—For nuts tapped left hand or for nuts tapped other than specified above, prices on application.

THUMB NUTS

DROP FORGED

Type A

Forged from a fine grade of steel that drills and taps readily. Furnished tapped, tumbled smooth.

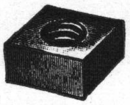
Tapped nuts are U. S. Standard threads and have base faced at right angle to hole.

For bolt, in.	Tapped, Per 100	Blank, Per 100	Width across wings, in.	Diam. top of barrel, in.	Thds. per in.	Wt. per 100, lbs.
⅛	$10.54	$4.10	¾	¼	40	.62
3/16	11.70	4.68	15/16	5/16	24	1.3
¼	12.88	5.26	1⅛	⅜	20	2.3
5/16	15.22	6.08	1 7/16	7/16	18	4.0
⅜	18.72	7.60	1 11/16	17/32	16	6.2
7/16	23.40	9.36	2	⅝	14	9.1
½	29.26	11.70	2¼	21/32	13	12.7

Open stock.

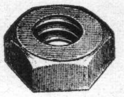
STOVE BOLT AND MACHINE SCREW NUTS

TAPPED



American Standard

Square and Hexagon



For screws, Nos. and in.	Per gross Square	Per gross Hex.	Threads Coarse	Threads Fine	Width flats, in.	Thickness, in.	Wt. per gross, lbs. Sq.	Wt. per gross, lbs. Hex.
			Steel					
2	$0.67	$0.75	56	64	3/16	1/16	.07	.06
3	.67	.75	48	56	3/16	1/16	.07	.06
4	.62	.66	40	48	¼	3/32	.20	.16
6	.64	.70	32	40	5/16	7/64	.36	.30
8	.67	.76	32	36	11/32	⅛	.49	.40
10	.70	.82	24	32	⅜	⅛	.57	.47
12	.90	1.05	24	28	7/16	5/32	.99	.81
¼	1.00	1.20	20	28	7/16	3/16	1.09	.88
5/16	1.60	1.90	18	24	9/16	7/32	2.13	1.73
⅜	2.20	2.60	16	24	⅝	¼	2.90	2.26
			Brass					
2	$0.90	$0.85	56	64	3/16	1/16	.076	.064
3	.90	.85	48	56	3/16	1/16	.076	.064
4	.95	.90	40	48	¼	3/32	.216	.173
6	1.25	1.15	32	40	5/16	7/64	.39	.33
8	1.50	1.35	32	36	11/32	⅛	.53	.43
10	1.60	1.45	24	32	⅜	⅛	.62	.51
12	2.80	2.40	24	28	7/16	5/32	1.07	.88
¼	3.20	2.70	20	28	7/16	3/16	1.18	.95
5/16	6.30	5.20	18	24	9/16	7/32	2.25	1.85
⅜	8.40	7.00	16	24	⅝	¼	3.13	2.46

One gross in a box.

Note—When ordering be sure to specify coarse or fine threads.

TURNBUCKLES

STUB END

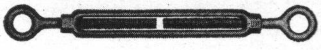
Forged Steel

Right and left hand stub ends; USS (coarse) threads. Standard 6 in. clearance between heads.

Diam. stub end, in.	Each	Wt. each, lbs.	Diam. stub end, in.	Each	Wt. each, lbs.
⅜	$0.45	¾	1	$1.10	5 15/16
½	.50	1 7/16	1⅛	1.40	7⅞
⅝	.60	2 3/16	1¼	1.70	10 5/16
¾	.75	3¼	1½	2.50	14½
⅞	.90	4 7/16			

Open stock.

EYE AND EYE

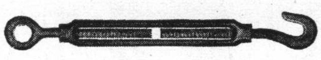


Drop Forged Steel, Galvanized

Diam. screw, in.	Each	Opening, in.	Wt. each, lbs.	Diam. screw, in.	Each	Opening, in.	Wt. each, lbs.
¼	$0.40	4	.31	½	$0.90	6	1.68
5/16	.50	4½	.42	⅝	1.15	6	2.75
⅜	.60	6	.79				

Open stock.

HOOK AND EYE



Drop Forged Steel, Galvanized

Diam. screw, in.	Each	Opening, in.	Wt. each, lbs.	Diam. screw, in.	Each	Opening, in.	Wt. each, lbs.
¼	$0.40	4	.32	½	$0.90	6	1.73
5/16	.50	4½	.43	⅝	1.15	6	2.88
⅜	.60	6	.82				

Open stock.

STEEL TAPER PINS

STANDARD

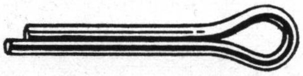
Taper ¼ Inch Per Foot

Nos.	1		2		3		4		5		6		7		8		9	
Diameter at largest end, in.	.172		.193		.219		.250		.289		.341		.409		.492		.591	
Approximate fractional size, in.	11/64		3/16		7/32		¼		19/64		11/32		13/32		½		19/32	
Length, in.	Per 100	Wt. 100, lbs.	Per 100	Wt. 100, lbs.	Per 100	Wt. 100, lbs.	Per 100	Wt. 100, lbs.	Per 100	Wt. 100, lbs.	Per 100	Wt. 100, lbs.	Per 100	Wt. 100, lbs.	Per 100	Wt. 100, lbs.	Per 100	Wt. 100, lbs.
1½	$2.90	.87	$3.10	1.07	$3.30	1.43	$3.60	1.92	$3.90	2.57	$5.00	3.70	$7.50	5.3	$9.00	7.8	$12.60	11.6
1¾	3.20	.99	3.40	1.22	3.60	1.63	3.90	2.16	4.20	2.93	5.50	4.23	8.00	6.1	9.70	9.0	13.50	13.3
2	3.50	1.08	3.70	1.36	3.90	1.83	4.20	2.40	4.50	3.28	6.00	4.73	8.50	6.9	10.40	10.1	14.40	15.0
2¼	3.90	1.16	4.10	1.49	4.30	2.00	4.60	2.64	4.90	3.64	6.50	5.22	9.40	7.6	11.40	11.2	15.60	16.8
2½	4.30	1.23	4.50	1.61	4.70	2.20	5.00	2.87	5.30	3.98	7.00	5.70	10.30	8.4	12.40	12.3	16.80	18.4
2¾	4.70	1.29	4.90	1.72	5.10	2.36	5.40	3.10	5.70	4.32	7.50	6.17	11.20	9.1	13.40	13.4	18.00	20.0
3	5.10	1.36	5.30	1.83	5.50	2.50	5.80	3.31	6.10	4.63	8.00	6.61	12.10	9.8	14.40	14.4	19.20	21.5
3¼	....	....	5.70	1.94	5.90	2.64	6.20	3.50	6.50	4.90	8.50	6.99	13.00	10.4	15.40	15.5	20.40	23.0
3½	....	....	6.10	2.06	6.30	2.78	6.60	3.69	6.90	5.16	9.00	7.36	13.90	11.0	16.40	16.5	21.60	24.5
3¾	....	....	....	....	6.70	2.91	7.00	3.87	7.30	5.41	9.50	7.72	14.80	11.6	17.40	17.4	22.80	26.0
4	....	....	....	....	7.10	3.04	7.40	4.02	7.70	5.63	10.00	8.06	15.70	12.1	18.40	18.3	24.00	27.4

Open stock.

STEEL COTTER PINS

STANDARD



Extended Prong Type

Length measured from point to neck under eye.

Lgth., in.	Per 1000	Wt. 1000, lbs.	No. in a ctn.
1/16 in. Diameter			
½	$0.50	.50	1000
¾	.65	.75	1000
1	.80	1.00	1000
1¼	.95	1.13	1000
1½	1.10	1.31	1000
1¾	1.25	1.50	1000
2	1.40	1.75	1000
3/32 in. Diameter			
½	$0.65	1.35	1000
¾	.90	1.80	1000
1	1.00	2.20	1000
1¼	1.25	2.60	1000
1½	1.45	3.10	1000
1¾	1.65	3.40	1000
2	1.80	4.10	1000
2½	2.40	4.86	1000
⅛ in. Diameter			
½	$0.95	2.40	1000
¾	1.25	3.30	1000
1	1.55	4.20	1000
1¼	1.85	4.80	1000
1½	2.15	5.67	1000
1¾	2.45	6.35	500
2	2.75	7.10	500
2½	3.35	8.75	500
3	3.95	10.00	500

Lgth., in.	Per 1000	Wt. 1000, lbs.	No. in a ctn.
5/32 in. Diameter			
¾	$2.05	5.20	1000
1	2.45	6.45	1000
1¼	2.95	7.30	500
1½	3.35	8.50	500
1¾	3.80	9.80	500
2	4.20	11.10	500
2¼	4.60	11.80	500
2½	5.05	13.30	500
3	5.90	15.50	250
3/16 in. Diameter			
¾	$ 2.70	8.60	1000
1	3.20	10.2	500
1¼	3.75	12.0	250
1½	4.30	13.0	250
1¾	4.85	15.7	250
2	5.40	16.4	250
2¼	5.95	19.2	250
2½	6.50	21.0	250
3	7.75	24.0	250
3½	8.90	27.4	250
4	10.05	31.3	250

Lgth., in.	Per 1000	Wt. 1000, lbs.	No. in a ctn.
¼ in. Diameter			
1	$ 5.40	19.0	500
1¼	6.40	21.4	250
1½	7.40	24.2	250
1¾	8.35	27.8	250
2	9.35	30.3	250
2¼	10.35	33.5	250
2½	11.35	35.0	250
3	13.30	40.0	125
3½	15.30	47.0	125
4	17.30	52.0	125
5/16 in. Diameter			
1	$ 8.50	31.0	250
1¼	9.90	36.4	250
1½	11.30	40.4	250
1¾	12.65	45.0	125
2	14.00	47.9	125
2¼	15.40	53.0	125
2½	16.75	58.0	125
3	19.50	65.2	...
3½	22.25	74.6	...
4	25.00	82.7	...
5	30.50	98.0	...

Lgth., in.	Per 1000	Wt. 1000, lbs.	No. in a ctn.
⅜ in. Diameter			
1½	$16.20	60.5	...
2	19.80	73.1	...
2½	23.10	84.7	...
3	26.40	97.1	...
3½	29.70	109.0	...
4	33.00	124.1	...
5	39.60	148.1	...
6	46.20	172.9	...
½ in. Diameter			
2	$46.00	166.0	...
2½	52.50	176.2	...
3	59.00	201.5	...
3½	65.50	224.5	...
4	72.00	250.3	...
5	85.00	295.6	...
6	98.00	359.2	...
⅝ in. Diameter			
3	$97.00	346.7	...
3½	110.00	384.6	...
4	122.00	415.4	...
5	147.00	504.3	...
6	173.00	585.0	...

All sizes, 5/16x3 in. and larger, in bulk.

HANDY ASSORTMENT

Contains approximately 100 assorted cotter pins, ranging in size from 1/16x½ to ⅛x1½ in. In all metal can.

Per dozen assortments

No. 100A—Wt. per dozen assortments 7 lbs. $1.38

Open stock.

JUNIOR GARAGE ASSORTMENT

Contains approximately 750 assorted cotter pins, ranging in size from 1/16x½ to ⅛x2 in. In a partitioned card box.

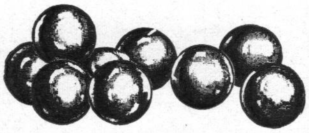
Per assortment

No. 750—Wt. per assortment 2 lbs. $1.60

Open stock.

STEEL BALLS

HOOVER

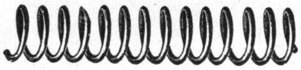


Grade 1 Chrome Alloy Steel

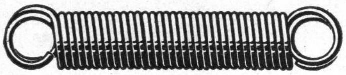
Guaranteed spherical within .000025 in. Maximum variation per carton, plus or minus .000025 in.

Diam., in.	Per 1000	Wt. carton, lbs.	No. in carton
1/16	$ 7.50	1.8	50,000
3/32	6.50	3.0	25,000
⅛	4.00	3.1	10,000
5/32	4.50	3.0	5,000
3/16	5.00	5.1	5,000
7/32	6.00	8.1	5,000
¼	8.00	4.8	2,000
9/32	10.00	6.8	2,000
5/16	12.00	4.7	1,000
⅜	19.00	8.0	1,000
7/16	28.00	6.5	500
½	40.00	9.5	500
9/16	55.00	13.4	450
⅝	72.00	9.3	250
11/16	95.00	10.0	200
¾	135.00	12.6	200
⅞	192.00	12.7	125
1	270.00	11.5	75
1⅛	440.00	10.9	50

COIL SPRINGS



Open or Compression



Closed or Extension

Made of oil tempered spring wire. Can be furnished in any style, types of ends, diameters of wire, or finish; in any tension or compression for any and all purposes.

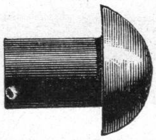
Deliveries are quick.

Prices on Request

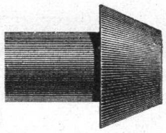
We are in position to supply many items not shown in this catalog and shall be pleased to receive your inquiries.

LARGE STEEL RIVETS

STRUCTURAL AND BOILER



Round Head
Structural
Quality



Cone Head
Boiler
Quality

All Structural and Boiler rivets conform to requirements of the A.S.T.M. Spec. A-141-39; A.S.T.M. A-31-40, grade A and the A.S.M.E. Boiler Code. Those ¾ in. and over also conform to A.S.T.M. Spec. A-131-39.

Net Extras Per 100 Pounds in 200 Pound Kegs

Round Head ....$ Base
Cone Head ....Net Extra .10

½ in. Diameter

Lgth., in.	Net extra for size	Wt. per 100, lbs. Round head	Wt. per 100, lbs. Cone head
¾	$1.35	8.12	.....
⅞	1.35	8.18	.....
1	1.35	9.49	.....
1⅛	1.35	10.18	.....
1¼	1.35	10.87	.....
1⅜	1.35	11.55	.....
1½	1.35	12.24	.....
1⅝	1.35	12.93	.....
1¾	1.35	13.62	.....
1⅞	1.35	14.30	.....
2	.85	14.99	.....
2¼	.85	16.37	.....
2½	.85	17.74	.....
2¾	.85	19.12	.....
3	.85	20.49	.....

⅝ in. Diameter

Lgth., in.	Net extra for size	Wt. per 100, lbs. Round head	Wt. per 100, lbs. Cone head
1	$0.95	16.38	.....
1½	.95	20.68	21.76
1⅝	.95	21.76	22.84
1¾	.95	22.83	23.91
1⅞	.95	23.91	24.99
2	.45	24.98	26.06
2⅛	.45	26.06	27.17
2¼	.45	27.13	28.21
2⅜	.45	28.21	29.29
2½	.45	29.28	30.36
2¾	.45	31.33	32.51
3	.45	33.58	34.66

¾ in. Diameter

Lgth., in.	Net extra for size	Wt. per 100, lbs. Round head	Wt. per 100, lbs. Cone head
1¼	$0.75	28.90	.....
1½	.75	31.99	.....
1¾	.75	35.08	.....
1⅞	.75	36.63	38.50
2	.25	38.17	40.04
2⅛	.25	39.72	41.59
2¼	.25	41.26	43.13
2⅜	.25	42.81	44.68
2½	.25	44.35	46.22
2⅝	.25	45.90	47.74
2¾	.25	47.44	49.31
2⅞	.25	48.99	50.86
3	.25	50.53	52.40
3⅛	.25	52.32	.....
3¼	.25	53.62	.....
3½	.25	56.71	.....
3¾	.25	59.80	.....
4	.25	62.89	.....
4¼	.75	65.98	.....
4½	.75	69.07	.....
5	.75	75.25	.....
6	.75	87.61	.....

(Continued)

LARGE STEEL RIVETS

STRUCTURAL AND BOILER

(Continued)

Net Extras Per 100 Pounds in 200 Pound Kegs

Round Head ....$ Base
Cone Head ....Net Extra .10

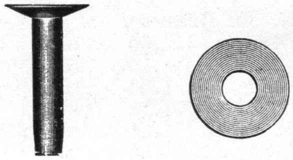
⅞ in. Diameter

Lgth., in.	Net extra for size	Wt. per 100, lbs. Round head	Wt. per 100, lbs. Cone head
2¼	$0.25	59.32	62.27
2⅜	.25	61.42	64.37
2½	.25	63.53	66.48
2⅝	.25	65.64	68.59
2¾	.25	67.75	70.70
2⅞	.25	69.85	72.80
3	.25	71.96	74.91
3¼	.25	76.18	79.13
3½	.25	80.39	83.34
3¾	.25	84.61	87.56
3⅞	.25	86.98	89.66
4	.25	88.82	91.77
4¼	.75	93.04	95.99
4½	.75	97.25	100.20
4¾	.75	101.47	......
5	.75	105.68	......
5½	.75	114.11	......
6	.75	122.54	......

Note—Intermediate and larger diameters and special lengths furnished promptly in lots of 200 or more of a size.

COPPER RIVETS AND BURRS

BELT



Solid Copper, Extra Large Heads

Used for belts, harness, brake lining, etc.

Uniform Lengths in ½ Pound Papers

	Per pound
No. 9—½, ⅝, ¾ and ⅞ in. lengths..	**$1.55**
No. 10—⅞ in. lengths	**1.55**

Assorted Lengths, ⅜ to ¾ in.; In ½ Pound Papers

Nos.	8	9	10
Per pound	**$1.50**	**1.50**	**1.55**

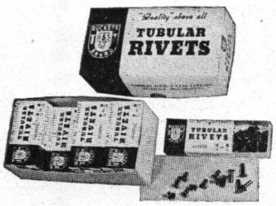
Note—Rivets and Burrs in equal numbers in a box.

Number of Copper Rivets and Burrs in a Pound

Length, in.	Nos. 8	9	10
⅜	227	276	336
½	178	228	275
⅝	156	184	223
¾	136	169	206
⅞	116	156	180
Burrs	417	620	820

TUBULAR RIVETS

STEEL



Japanned, Assorted Lengths

5/16 in. diameter head; 9/64 in. diameter body.

Smooth, highly finished and attractively packaged.

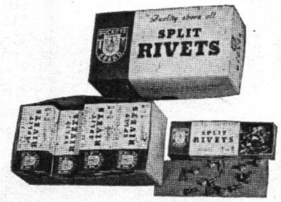
Per dozen boxes

No. 1—Tubular, assorted 4/16, 5/16, 6/16, 7/16 and 8/16 in. lengths, 50 in a box; wt. per dozen boxes 1 5/16 lbs. . .$2.35

One dozen boxes in a carton.

SPLIT RIVETS

STEEL



Japanned, Assorted Lengths

Bevel pointed, oval head. 5/16 in. diameter head; 5/32 in. diameter body.

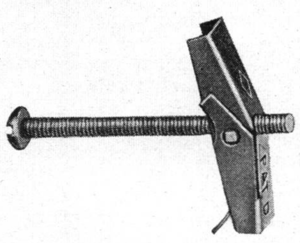
Per dozen boxes

No. 1—Split; assorted 4/16, 5/16, 6/16, 7/16 and 8/16 in. lengths, 50 in a box; wt. per dozen boxes 1 3/16 lbs. $1.82

One dozen boxes in a carton.

TOGGLE BOLTS

DIAMOND, SPRING



Type R—With Round Head Screws

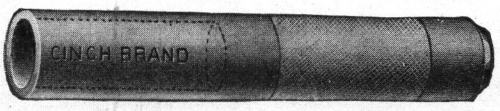
Four bearing contacts provide added strength.

Two wings engage a trunnion nut and spring which forces wings outward when head has passed through wall.

One end of wing is extended to prevent rotation of head while turning in the screw.

Screw size, in.	Per 100	Drill req'd., in.	Wt. per 100, lbs.
⅛x3	$ 9.00	⅜	2
⅛x4	10.00	⅜	2¼
3/16x3	9.50	½	3¾
3/16x4	10.00	½	4¼
3/16x5	12.00	½	4¾
¼x3	$10.50	11/16	6
¼x4	11.00	11/16	7¼
¼x5	14.00	11/16	8½
¼x6	15.50	11/16	9½

CINCH CALKING TOOLS



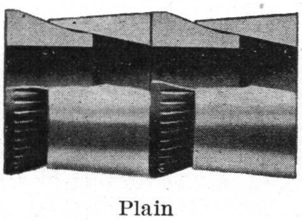
Type 24—For Expanding Cinch Anchors

Diam. bolt, in.	Each	*Nominal pipe size, in.	Length, in.	Wt. each, lbs.
¼	$1.00	¼	6	5/16
5/16	1.00	¼	6	5/16
⅜	1.20	⅜	8	11/16
½	1.70	½	10	1 7/16
⅝	3.00	¾	12	2 3/16
¾	3.60	1	12	3 7/16
⅞	4.20	1	15	4⅞
1	6.80	1	18	6½

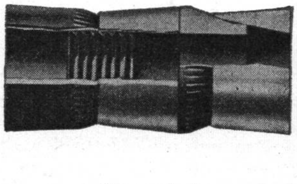
*Pipe size to replace calking tools; black or galvanized standard weight pipe.

CINCH ANCHORS

TWO-UNIT STANDARD, MACHINE BOLT



Plain



Threaded

A two-unit anchorage consists of 4 pieces, 2 iron cones and 2 lead alloy sections; one unit plain and one unit threaded or both units plain.

The two-unit should be used for anchorage of ordinary strength.

Diam. bolt, in.	Per 100 sets	Min. depth holes, in.	Diam. hole and drill, in.	Wt. per carton, lbs.	No. in a carton
		Plain			
¼	$ 16.00	1 1/16	⅝	5⅞	100
5/16	18.00	1 1/16	⅝	5⅞	100
⅜	22.00	1½	13/16	5 13/16	50
½	36.00	1¾	1	10 13/16	50
⅝	48.00	1⅞	1⅛	14¾	50
¾	70.00	2½	1⅜	14½	25
⅞	88.00	2¾	1½	18	25
1	126.00	3¼	1⅝	19 3/16	25
		Threaded			
¼	$ 16.00	1 1/16	⅝	6 9/16	100
5/16	18.00	1 1/16	⅝	6⅞	100
⅜	22.00	1½	13/16	7½	50
½	36.00	1¾	1	12⅞	50
⅝	48.00	1⅞	1⅛	17⅛	50
¾	70.00	2½	1⅜	18 3/16	25
⅞	88.00	2¾	1½	22¾	25
1	126.00	3¼	1⅝	26⅜	25

THREE-UNIT STANDARD, MACHINE BOLT

The three-unit anchorage consists of 6 pieces, 3 iron cones and 3 lead alloy sections, without bolts; two units plain and one threaded, or all three units plain.

Diam. bolt, in.	Per 100 sets	Min. depth holes, in.	Diam. hole and drill, in.	Wt. per carton, lbs.	No. in a carton
		Plain			
¼	$ 24.00	1⅝	⅝	8 11/16	100
5/16	27.00	1⅝	⅝	8 11/16	100
⅜	33.00	2¼	13/16	8⅝	50
½	54.00	2⅝	1	16 1/16	50
⅝	72.00	2⅞	1⅛	21⅞	50
¾	105.00	3¾	1⅜	21 9/16	25
⅞	132.00	4	1½	27	25
1	189.00	4⅞	1⅝	29 9/16	25
		Threaded			
¼	$ 24.00	1⅝	⅝	9⅜	100
5/16	27.00	1⅝	⅝	9 11/16	100
⅜	33.00	2¼	13/16	10 3/16	50
½	54.00	2⅝	1	18 1/16	50
⅝	72.00	2⅞	1⅛	23 13/16	50
¾	105.00	3¾	1⅜	24½	25
⅞	132.00	4	1½	31 9/16	25
1	189.00	4⅞	1⅝	36 7/16	25

INSTALLATION AND LOAD-STRENGTH DATA

Recommended Number of Units

Diam. bolts, in.	*Safe load for U.S. Std. Steel bolts, lbs.	**No. of units required to equalize strength of bolts
¼	172	2
5/16	297	2
⅜	451	2
½	845	2
⅝	1370	3
¾	2070	3
⅞	2900	3
1	3800	3

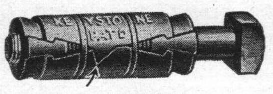
*Based on approximately 1/10 actual holding power.

**When masonry is of doubtful grade additional units should be used.

Hole must be drilled to proper depth before installing first unit. Anchors to be calked tightly, in proper size holes.

EXPANSION SHIELDS

KEYSTONE DOUBLE INTERLOCKING, MACHINE BOLT



Malleable Iron, Galvanized; Parallel Expansion

The interlocking key prevents nut from being drawn out of shield when heavy loads are applied. Prevents over expansion of bolt, as it cannot be turned further when nut reaches stop. Prevents nut being drawn past point of maximum expansion, and locks the two shields and nut into a unit of resistance against load. Nut cannot be pulled out without extracting shield.

Shields Only, Without Machine Bolts

Nos.	Per 100	For machine bolt, in.	Length shield, in.	Outside diam. and drill req'd., in.	Wt. per 100, lbs.	No. in package
1404	$15.00	¼	1½	½	4	100
1405	18.00	5/16	1¾	9/16	6	100
1406	25.00	⅜	2	11/16	7	50
1408	38.00	½	2½	⅞	12	50
1410	45.00	⅝	2⅞	1	18	25
1412	65.00	¾	3¼	1⅛	35	25

"DI-EN-KEY" MACHINE BOLT

PAT'D
DI-EN KEY
INTERLOCKING KEY

Malleable Iron, For Machine Bolts

Closed Back or Bottom Bearing

Nut locking construction with powerful wedge expansion produced by the tapered nut on the tapered interior bore. Raised longitudinal ribs. Interlocking key prevents withdrawal of nut.

Bottom bearing type bolts give best service in making attachments where direct bearing of the work against the surface is not required, as is the case in suspension rods for mine hangers, steam and water pipes, sprinkler systems and allied lines. The smaller sizes are particularly adapted to opera chairs and school furniture work.

Without Machine Bolts

Nos.	Per 100	For bolt, in.	Length shield, in.	Outside diam. and drill req'd., in.	Wt. per 100, lbs.	No. in package
1604	$15.00	¼	1	7/16	2	100
1605	18.00	5/16	1¾	9/16	6	100
1606	25.00	⅜	2	11/16	9	50
1608	38.00	½	2½	⅞	17	50
1610	45.00	⅝	2½	1	21	50
1612	65.00	¾	2¾	1¼	34	25

ACKERMAN-JOHNSON ANCHOR, MACHINE SCREW AND BOLT

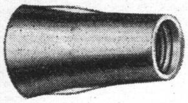


Fig. 1

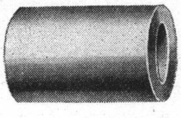


Fig. 2

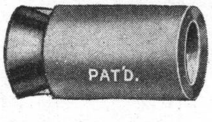
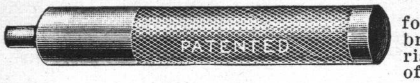


Fig. 3

Consists of a deep nut of specific design (Fig. 1) with lead alloy expansive retainer sleeve (Fig. 2), factory assembled to normal positions (Fig. 3) to be handled as one piece.

In installing, the retainer sleeve is driven further on the tapers of the nut and is expanded equally against all sides of hole. Perfect holding contact is made throughout length and circumference of anchor.



One piloted setting punch for setting anchors in concrete, brick, stone or any hard material, included in each package of anchors.

Screw size, Nos.	Per 100	Min. size holes req'd. Diam., in.	Min. size holes req'd. Depth, in.	Safe load, lbs.	Wt. per 100, lbs.	No. in box
8-32	$6.50	5/16	½	50	1¼	100
10-24	7.50	⅜	⅝	75	2½	100
¼-20	11.00	½	⅞	150	5¼	100
5/16-18	15.00	⅝	1	200	9	100
⅜-16	20.00	¾	1¼	300	14½	100
½-13	26.00	⅞	1½	400	21½	100
⅝-11	50.00	1⅛	2	600	46	100

EXPANSION SHIELDS

DIAMOND P, LAG SCREW

High Carbon Malleable Iron For Lag Screws

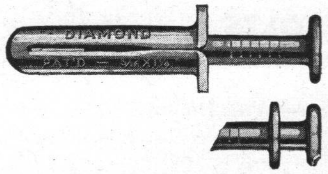
The inner end has added flexibility of expansion, developed by the cutaway slots dividing it into four segments which expand radially giving a four-way expansion.

Radial expansion provides greater flexibility where slight variations in hole occur, and permits a lag screw to be turned entirely through the shield. Thread locking feature.

Nos.	Per 100	For lag screw, in.	Length shield, in.	Outside diam. and drill req'd., in.	Wt. per 100, lbs.	No. in package
		Short Standard, Without Lag Screws				
1004	$15.00	¼	1	7/16	3	100
1005	18.00	5/16	1	½	4	100
1006	25.00	⅜	2	⅝	10	50
1008	38.00	½	2	¾	10	50
1010	45.00	⅝	2	⅞	13	50
1012	65.00	¾	2	1	21	25
		Long Standard, Without Lag Screws				
1104	$15.00	¼	1½	½	4	100
1105	18.00	5/16	1¾	9/16	5	100
1106	25.00	⅜	2¾	⅝	9	50
1108	38.00	½	3½	¾	17	50
1110	45.00	⅝	3½	⅞	21	25
1112	65.00	¾	3½	1⅛	34	25

HAMMER DRIVE ANCHORS

DIAMOND DHD



Aluminum, with Steel Nails

Nails are heavily galvanized.

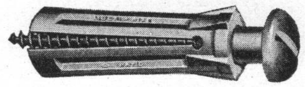
Drill hole, place shield through hardware and drive nail in.

Holds a greater load when fastened to stone than a wood screw of the same diameter in wood.

Nos.	Per 100	Size, in. Diam. Lgth.	Size drill req'd., in.	Wt. per 100, lbs.	No. in package
4314	$8.00	3/16 x ⅞	3/16	1	100
4320	9.00	3/16 x 1¼	3/16	1⅛	100
4416	10.00	¼ x 1	¼	1½	100
4420	11.00	¼ x 1¼	¼	2	100
4424	12.00	¼ x 1½	¼	2⅛	100
4520	14.00	5/16 x 1¼	5/16	2¾	100
4528	16.00	5/16 x 1¾	5/16	3½	100
4536	18.00	5/16 x 2¼	5/16	4½	100
4544	20.00	5/16 x 2¾	5/16	5	100
4632	20.00	⅜ x 2	5/16	6½	100
4652	25.00	⅜ x 3¼	5/16	8¼	100
4836	30.00	½ x 2¼	5/16	11½	50
4856	35.00	½ x 3½	5/16	15½	50

SCREW ANCHORS

DIAMOND, MULTI-SIZE



Rustproof Composition Metal

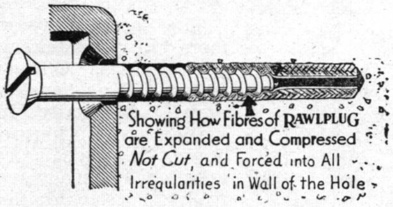
Each size anchor is designed to accommodate several diameters of wood screws. A small stock will cover all sizes of screws.

For Wood Screws, Without Screws

Nos.	Per 100	For wood screws, Nos.	Length, in.	Drill size, in.	Wt. per 100, lbs.	No. in package
5212	$5.00	6- 8	¾	¼	1	100
5224	5.60	6- 8	1½	¼	1¾	100
5312	5.60	10-14	¾	5/16	1½	100
5316	5.60	10-14	1	5/16	1¾	100
5324	8.00	10-14	1½	5/16	2½	100
5516	6.25	16-18	1	⅜	2¾	100
5524	9.00	16-18	1½	⅜	4	100
5628	10.00	20-24	1¾	7/16	5¼	100

SCREW ANCHORS

RAWLPLUGS


Showing How Fibres of RAWLPLUG
are Expanded and Compressed
Not Cut, and Forced into All
Irregularities in Wall of the Hole

Without Screws

Made of stiffened strands of tough jute fibre compressed together by a patented process. Their grip is greater than any other screw anchorage device or expansion bolt, because hole, Rawlplug and screw are of practically the same diameter. Rawlplugs are not affected by moisture and will not deteriorate, pulp, shear or work loose.

Will hold fast in any material, wood, plaster, glass, masonry, slate, marble, tile, brick or metal. Screws can be removed and replaced as often as desired without damaging the Rawlplug.

For Standard Wood Screws

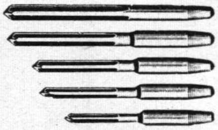
Size, Nos.	Lgth., in.	Per 100	Drill size, in.	Screw size	Lgth. screw, in.	Wt. std. pkg., lbs.	No. in box
6	¾	$ 2.80	5/32	5– 6	1¼	1	100
6	1	3.00	5/32	5– 6	1½	1½	100
8	¾	3.20	11/64	7– 8	1¼	1½	100
8	1	3.40	11/64	7– 8	1½	2	100
8	1½	3.80	11/64	7– 8	2–2½	2½	100
10	1	3.80	3/16	9–10	1½	2½	100
10	1¼	4.20	3/16	9–10	1¾	2¾	100
10	1½	4.60	3/16	9–10	2–2½	3¼	100
12	¾	4.20	¼	11–12	1¼	2½	100
12	1	4.60	¼	11–12	1½	3½	100
12	1¼	5.00	¼	11–12	1¾	4¾	100
12	1½	5.40	¼	11–12	2–2½	5½	100
14	1	5.40	9/32	14	1½	4½	100
14	1¼	6.00	9/32	14	1¾	5½	100
14	1½	6.60	9/32	14	2–2½	6	100
16	1	6.10	5/16	16	1½	2½	50
16	1½	7.60	5/16	16	2–2½	3¾	50
16	2	9.10	5/16	16	3–3½	5	50
20	1	9.00	⅜	20	1½	3½	50
20	1½	11.00	⅜	20	2–2½	5½	50
20	2	13.00	⅜	20	3–3½	7½	50

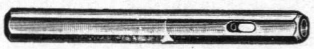
Use Nos. 14 and 16 for ¼ in. lag screws; No. 20 for 5/16 in. lag screws.

Twelve boxes in a standard package.

RAWLDRILLS AND HOLDERS

M-T MACHINE TYPE





For Hand and Power Drilling

Accurately machined from solid bars of high grade tool steel.

Size, Nos.	Diam., in.	Per dozen Drills	Per dozen Holders	Use tool holders, No.	Wt. doz., lbs. Holders	Wt. doz., lbs. Drills
6	5/32	$11.50	$24.00	14	6¼	¼
8	11/64	11.50				¼
10	3/16	11.50				¼
12	¼	11.50				½
14	9/32	11.50	30.00	20	8	½
16	5/16	11.50				¾
20	⅜	11.50				1

One dozen in a box.

STAR DRILLS

"DIAMOND N"

Octagon Drill Rod

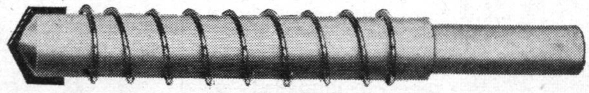
Carefully tested for uniformity and scientifically heat treated. Actual tests are made in various kinds of stone to insure a temper that will give the best average service in all.

Diam., in.	12 in. Long Per dozen	12 in. Long Wt. dozen, lbs.	18 in. Long Per dozen	18 in. Long Wt. dozen, lbs.
¼	$8.50	2⅛	$11.00	3
5/16	8.50	2½	11.00	3⅞
⅜	8.50	3¾	11.00	5
7/16	9.00	5	11.50	7
½	10.00	5	12.50	7¾
⅝	12.00	9¼	15.00	13¾
¾	14.00	11½	17 50	16¾
⅞	16.00	14	20.00	20½
1	18.00	20	22.50	30
1⅛	24.00	25	28.00	37
1¼	30.00	28½	35.00	42½

Open stock.

MASONRY DRILLS

CARBOLOY TIPPED, "LIVE SPIRAL"



The most revolutionary development in masonry drill history. New principle lifts out dust; permits continuous drilling, faster, easier, cleaner, deeper.

This is an ideal line of drills for universal drilling of concrete, brick, tile, marble, slate, asphalt, plaster. The hard Carboloy tip keeps them sharp longer.

Nos.	Each	†Nominal diam., in.	Diam. shank, in.	Lgth. over all, in.	Min. drill diam., in.	Wt. ctn., lbs.	††No. in a ctn.
* **DM- 3**	$1.40	3/16	5/32	3	.198	⅝	12
WDM- 4	1.40	¼	3/16	4	.260	⅞	12
WDM- 5	1.50	5/16	¼	4	.328	1¼	12
WDM- 6	1.60	⅜	5/16	4	.390	1⅜	12
WDM- 7	1.85	7/16	⅜	6	.458	2 9/16	6
WDM- 8	2.05	½	⅜	6	.525	2¾	6
WDM- 9	2.30	9/16	7/16	6	.587	2⅛	3
WDM-10	2.45	⅝	½	6	.650	2 5/16	3
****WDM-12**	3.15	¾	½	6	.775	2⅝	3
****WDM-14**	3.80	⅞	½	6	.905	3 9/16	3
****WDM-16**	5.40	1	½	6	1.030	4⅛	3

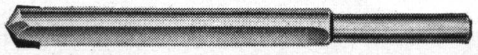
*Furnished round shank only, not "Live Spiral."

**Length of shank 1⅝ in.

†Sufficient oversize allowances are provided for proper hole size required for installation of expansion shields, anchors and toggle bolts.

††All drills are individually packaged, complete with operating instructions.

CARBOLOY TIPPED, FLUTED SHANK



For Deep Hole Drilling

Special flutes on the shank permit loosened material to escape; allow easy drilling of hole in any masonry.

Nos.	Each	†Nominal diam., in.	Diam. shank, in.	Lgth. over all, in.	Min. drill diam., in.	Wt. ctn., lbs.	††No. in a ctn.
FDM-8	$ 8.70	1⅛	½	6	1.160	1½	1
FDM-20	10.50	1¼	½	10	1.285	2	1
FDM-24	12.90	1½	½	10	1.535	2 11/16	1

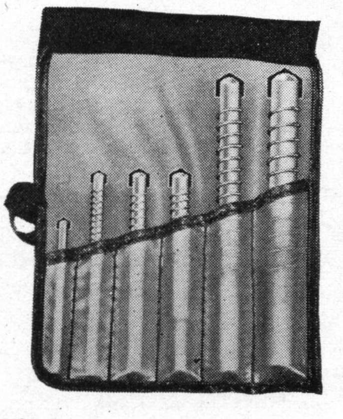
Length of shank, all Nos., 1⅝ in.

†Sufficient oversize allowances are provided for proper hole size required for installation of expansion shields, anchors and toggle bolts.

††All drills are individually packaged, complete with operating instructions.

How to Order—Specify drill number. Order in standard package quantities wherever possible.

CARBOLOY TIPPED "LIVE SPIRAL" ASSORTMENTS



In Handy Kits

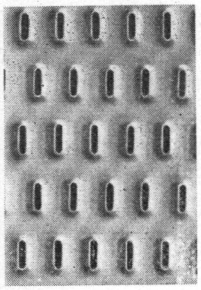
Popular size "Live Spiral" masonry drills in durable, attractive, long-lasting, leatherette plastic kits with pockets to hold each drill for easy, quick identification.

	Per kit
Kit A—Contains 6 drills, 3/16 (without spiral), ¼, 5/16, ⅜, ½ and ⅝ in. nominal diameter; wt. per kit 1½ lbs.	$10.40
Kit C—Contains 3 drills, ¼, ⅜ and ½ in. nominal diameter; wt. per kit 1 lb.	5.05

One kit in a box.

PERFORATED STEEL WELL CASING

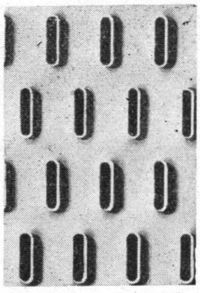
GALVANIZED, RIVETED



Standard Perforations

In use for many years in hundreds of Western wells. Perforations are ⅞ in. long. In casing made of 20 and 22 gauge steel, perforations are 1/16 in. wide. In casing made of 18, 16, 14, 12 and 10 gauge steel, the perforations may be had 1/16, ⅛ and 3/16 in. wide.

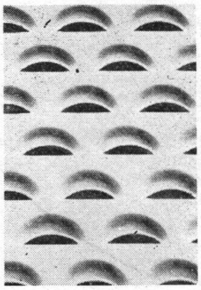
Sections 36 in. long only.



Improved Perforations

Now the favorite of many well drillers. Perforations are 1 7/16 in. long. In casing made of 14, 12, and 10 gauge steel, perforations may be had ¼ or 5/16 in. wide. This perforation is not available in 16 gauge steel nor in casing of diameters less than 12 in.

Sections 36 in. long only.



Louvre Perforations

The latest development in well casing perforations. Often called the "eyelid" type. Generally installed with louvres down. Especially adapted for gravel packed wells drilled by either rotary or "dummy casing" cable tool methods. Perforations vary from 1⅛ to 1⅞ in. wide. Perforation openings ⅛, 3/16, ¼, 5/16 and ⅜ in. Minimum casing diam. 12 in.

Gauges, 16, 14, 12 or 10.

Section lengths 36 in. only.

Specifications

Thicknesses—USS gauge, 16, 14, 12 and 10.

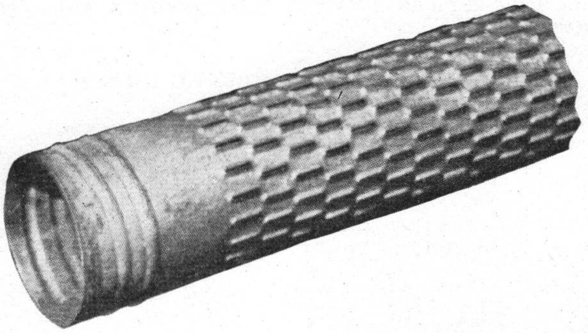
Diameters—5 to 72 in.

Lengths—All sections, 3 ft. long. These sections will be factory riveted together to form longer lengths when desired. Both factory and field joints lap 1½ in. Therefore, make-up length of each 3 ft. section is 34½ in. unless furnished with butt strap joint.

Prices on Request

PERFORATED STEEL WELL CASING

GALVANIZED, LOCK SEAM



Extensively used for stock wells 20 to 160 ft. deep. Not recommended for deeper wells.

Made of heavy galvanized steel in 20 gauge. Lock Seam Well Casing is strong, light in weight and inexpensive. Anyone, even though totally inexperienced, can put this casing together because the uniform, Machine-Made threads go together with a simple twist.

In addition to its use for casing wells, perforated lock seam casing is also widely used for ventilating grain bins and coal piles, for infiltration pipe, and for sub-drainage pipe.

Specifications

Thickness—USS 20 gauge only.

Diameters—4 to 10 in. inclusive.

Lengths—All sections 3 ft. long. These sections will be factory-riveted together to form longer lengths when desired. Both factory and field riveted joints lap 1⅜ in. therefore, make-up length of each 3 ft. section is 34⅞ in. Each screw-joint field connection laps 2½ in. To figure make-up length in field, therefore, deduct 2½ in. for each screw joint and 1⅝ in. for each riveted joint.

Perforations—Available only in Standard perforations 1/16 in. wide.

Field Connections—Two types available—screw joint and riveted-lapped joint. For sub-drainage or infiltration pipe, slip joint connections are available.

Sizes and Weights

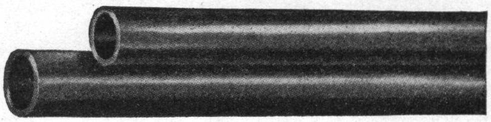
20 gauge only.

Inside diameter, in.	4	5	6	8	10
Wt. per foot, lbs.	1.9	2.3	2.75	3.63	4.54

Prices on Request

STEEL BOILER TUBES

HOT ROLLED SEAMLESS



All tubes are manufactured and tested in accordance with the latest rules and regulations of the board of supervising inspectors, bureau of navigation and steamboat inspection.

They conform to the A.S.T.M. specification for lap-welded, seamless and lapwelded charcoal iron boiler tubes, serial designation A-83-33 and with the A.S.M.E. power boiler code, 1933 edition. Also conform to Federal Specifications WWT-731-A and U. S. Navy Specifications 44T-11.

OD, in.	Min. Thickness BW gauge	Min. Thickness Inches	Wt. per ft., lbs.	Stock lengths, ft.
1	13	.095	1.037	10, 12, 14, 16
2	13	.095	2.201	10, 12, 14, 16
3	12	.109	3.838	10, 12, 14, 16
3½	11	.120	4.921	14, 16, 18
4	10	.134	6.286	14, 16, 18

Boiler tubes are cut to exact length without leaving a burr on the tube. A small charge is added for cutting to lengths. Safe ends of any diameter and length are available from stock. Stock tubes do not have annealed ends.

Prices on Request

CONDENSER TUBES

Available in brass, copper and Admiralty metal in a wide range of diameters and wall thicknesses.

Complete Information and Prices on Request

STEAM, WATER AND GAS PIPE

WROUGHT STEEL

THE YOUNGSTOWN SHEET & TUBE CO.

Standard pipe is known and spoken of by its nominal inside diameter from ⅛ to 12 in. inclusive; above 12 in. diameter by its outside diameter, and when ordering, thickness desired must be specified.

Different weights of pipe of the same nominal size have the same outside diameter, the extra thickness always being on the inside.

If cut lengths of any sizes are ordered, instructions must appear on the face of the order whether plain ends, threads only or threads and couplings are required.

All threads taper ¾ in. per foot.

C.W.—Continuous butt weld, made and stocked in sizes ⅛ through 4 in. In uniform 21 ft. lengths. Offers the advantages of more uniform welds; uniform quality as well as uniform lengths. Will withstand higher pressure than ordinary butt weld pipe.

Electric Weld—Made 6 in. through 22 in.; stocked 6 in. through 12 in.

Seamless—2 in. through 14 in. Not stocked but readily available.

Standard Weight, Black and Galvanized, Threaded and Coupled

Size, in.	Per foot	OD, in.	ID, in.	Thickness, in.	Thds. per in.	Wt. ft., lbs. thd. & cpld.	Couplings Lgth., in.	Couplings OD, in.
⅛	$0.05½	.405	.269	.068	27	.24	13/16	.563
¼	.06	.540	.364	.088	18	.42	1 3/16	.719
⅜	.06	.675	.493	.091	18	.57	1 3/16	.875
½	.08½	.840	.622	.109	14	.85	1 9/16	1.063
¾	.11½	1.050	.824	.113	14	1.13	1⅝	1.313
1	.17	1.315	1.049	.133	11½	1.68	2	1.576
1¼	.23	1.660	1.380	.140	11½	2.28	2 1/16	1.900
1½	.27½	1.900	1.610	.145	11½	2.73	2 1/16	2.200
2	.37	2.375	2.067	.154	11½	3.67	2⅛	2.750
2½	.58½	2.875	2.469	.203	8	5.81	3⅛	3.250
3	.76½	3.500	3.068	.216	8	7.61	3¼	4.000
3½	.92	4.000	3.548	.226	8	9.20	3⅜	4.625
4	1.09	4.500	4.026	.237	8	10.88	3½	5.000
5	1.48	5.563	5.047	.258	8	14.81	3¾	6.296
6	1.92	6.625	6.065	.280	8	19.18	4	7.390
8	2.50	8.625	8.071	.277	8	25.00	4¼	9.625
8	2.88	8.625	7.981	.322	8	28.80	5¼	9.625
10	3.20	10.750	10.192	.279	8	32.00	5¾	11.750
10	3.50	10.750	10.136	.307	8	35.00	5¾	11.750
10	4.12	10.750	10.020	.365	8	41.13	5¾	11.750
12	4.50	12.750	12.090	.330	8	45.00	6⅛	14.000
12	5.07	12.750	12.000	.375	8	50.70	6⅛	14.000

Extra Strong, Black and Galvanized, Plain Ends

Size, in.	Per foot	Diameter, inches External	Diameter, inches Internal	Thick., in.	Wt. per ft., plain ends, lbs.
⅛	$0.12	.405	.215	.095	.31
¼	.07½	.540	.302	.119	.54
⅜	.07½	.675	.423	.126	.74
½	.11	.840	.546	.147	1.09
¾	.15	1.050	.742	.154	1.47
1	.22	1.315	.957	.179	2.17
1¼	.30	1.660	1.278	.191	3.00
1½	.36½	1.900	1.500	.200	3.63
2	.50½	2.375	1.939	.218	5.02
2½	.77	2.875	2.323	.276	7.66
3	1.03	3.500	2.900	.300	10.25
3½	1.25	4.000	3.364	.318	12.51
4	1.50	4.500	3.826	.337	14.98
5	2.08	5.563	4.813	.375	20.78
6	2.86	6.625	5.761	.432	28.57
8	4.34	8.625	7.625	.500	43.39
10	5.48	10.750	9.750	.500	54.74
12	6.55	12.750	11.750	.500	65.42

An extra charge will be made for extra strong pipe fitted with threads and couplings.

For cut lengths an extra charge will be made above random lengths.

All weights and dimensions are nominal.

Permissible variation in weight is 5% above and 5% below for standard and extra strong pipe.

STEAM, WATER AND GAS PIPE

WROUGHT STEEL

Double Extra Strong, Black Only, Plain Ends

Size, in.	Per foot	Diameter, inches External	Diameter, inches Internal	Thick., in.	Wt. per ft., plain ends, lbs.
½	$0.32	.840	.252	.294	1.71
¾	.35	1.050	.434	.308	2.44
1	.37	1.315	.599	.358	3.66
1¼	.52½	1.660	.896	.382	5.21
1½	.65	1.900	1.100	.400	6.41
2	.91	2.375	1.503	.436	9.03
2½	1.37	2.875	1.771	.552	13.70
3	1.86	3.500	2.300	.600	18.58
3½	2.30	4.000	2.728	.636	22.85
4	2.76	4.500	3.152	.674	27.54
5	3.86	5.563	4.063	.750	38.55
6	5.32	6.625	4.897	.864	53.16
8	7.25	8.625	6.875	.875	72.42

An extra charge will be made for double extra strong pipe fitted with threads and couplings.

For cut lengths an extra charge will be made above random lengths.

Permissible variation in weight is 10% above and 10% below.

REAMED AND DRIFTED PIPE

WROUGHT STEEL

Reamed on the ends and a plug is run through (drifted) each joint to insure inside clearance so that pump leathers will work properly in the pipe. It is made especially for water wells and may be driven. It is made in lengths of 16 to 22 ft., with threaded ends, provided with recessed couplings of greater length and strength than furnished on standard pipe.

Size, in.	Per foot	Diam., in. External	Diam., in. Internal	Thickness, in.	Wt. per ft., lbs.	Threads per in.
2	$0.37	2.375	2.067	.154	3.75	11½
2½	.58½	2.875	2.469	.203	5.90	8

PUMP PIPE—GALVANIZED

18 FOOT UNIFORM LENGTHS

This pipe is standard weight, furnished with standard threads and couplings in lengths of 18 ft., plus or minus 1 in., measured over the coupling.

This is used in wells where the pump leathers work in a cylinder on end of drop pipe.

The 18 foot lengths make it easy to assemble the 20 foot lengths of sucker rod in the pipe.

Size, in.	Per foot	Diam., in. External	Diam., in. Internal	Thickness, in.	Wt. per ft., lbs.	Threads per in.
1	$0.17	1.315	1.049	.133	1.68	11½
1¼	.23	1.660	1.380	.140	2.28	11½

BUNDLING SCHEDULE FOR WROUGHT STEEL PIPE

Size, in.	No. of pcs. per bdle.	Standard Av. No. of ft. per bdle.	Standard Av. wt. per bdle., lbs.	Extra Strong Av. No. of ft. per bdle.	Extra Strong Av. wt. per bdle., lbs.
⅛	30	630	151	630	157
¼	24	504	211	504	216
⅜	18	378	215	378	215
½	12	252	214	252	216
¾	7	147	166	147	167
1	5	105	176	105	178
1¼	3	63	144	63	144
1½	3	63	172	63	173

Double Extra Strong

Size, in.	No. of pieces per bundle	Av. No. of ft. per bundle	Av. wt. per bundle, lbs.
½	7	147	251
¾	5	105	256
1	3	63	230
1¼	3	63	328
1½	3	63	403

Order sizes ⅛ to 1½ in. by bundle; order sizes 2 to 12 in. in random lengths.

A.P.I. LINE PIPE

PLAIN END

For Water, Gas and Oil Lines
Ends Finished for Specified Couplings or Welded Joints

These tables are intended for the determination of sizes and thicknesses for long lines. They include all sizes listed in American Petroleum Institute Line Pipe Specification.

The permissible variation in weight for all plain end pipe for gas and oil lines is in accordance with API specifications.

Barlow's formula, with a safety factor of 4, was used in calculating the listed working pressures that are given for lapweld, Grade A and Grade B seamless line pipe. To obtain the working pressure for other factors of safety, multiply the pressure shown by 4, and divide by the safety factor desired.

Lapweld and Seamless

Sizes 4½ in. OD and 6⅝ in. OD.

Size OD, in.	Per foot	Wall thickness, in.	Max. safe working pressure, lbs. Welded or Grade A	Max. safe working pressure, lbs. Grade B	Wt. per foot, lbs.
4½	$0.86	.188	1200	1400	8.64
4½	1.00	.219	1400	1630	10.00
4½	1.09	.237	1520	1770	10.79-S
4½	1.13	.250	1600	1870	11.35
4½	1.26	.281	1800	2100	12.67
4½	1.39	.312	2000	2330	13.98
4½	1.50	.337	2160	2500	14.98-X
6⅝	1.49	.219	1200	1400	14.97
6⅝	1.70	.250	1400	1600	17.02
6⅝	1.92	.280	1500	1800	18.97-S
6⅝	2.10	.312	1700	2000	21.07
6⅝	2.30	.344	1900	2200	23.06
6⅝	2.50	.375	2000	2400	25.03
6⅝	2.86	.432	2300	2500	28.57-X

Electric Weld and Seamless

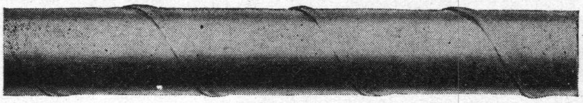
Sizes 8⅝ in. OD through 20 in. OD.

Size OD, in.	Per foot	Wall thickness, in.	Welded or Grade A	Grade B	Wt. per foot, lbs.
8⅝	$1.69	.188	630	730	16.90
8⅝	1.96	.219	730	850	19.64
8⅝	2.23	.250	830	970	22.36
8⅝	2.50	.277	930	1080	24.70-S
8⅝	2.77	.312	1040	1220	27.74
8⅝	2.88	.322	1080	1250	28.55-S
8⅝	3.04	.344	1150	1340	30.40
8⅝	3.30	.375	1250	1460	33.04
8⅝	3.82	.438	1460	1700	38.26
8⅝	4.34	.500	1670	1950	43.39-X
10¾	2.46	.219	590	680	24.60
10¾	2.80	.250	670	780	28.04
10¾	3.20	.279	750	870	31.20-S
10¾	3.50	.307	820	960	38.24-S
10¾	3.82	.344	920	1070	38.20
10¾	4.12	.365	980	1140	40.48-S
10¾	4.81	.438	1170	1370	48.19
10¾	5.48	.500	1340	1560	54.74-X
12¾	3.33	.250	560	660	33.38
12¾	3.74	.281	640	740	37.45
12¾	4.15	.312	710	820	41.51
12¾	4.50	.330	750	870	43.77-S
12¾	4.55	.344	780	910	45.55
12¾	5.07	.375	850	990	49.56-S
12¾	5.75	.438	990	1150	57.53
12¾	6.55	.500	1130	1320	65.42-X
14	5.01	.344	710	820	50.14
14	5.45	.375	770	900	54.57
14	6.33	.438	900	1050	63.37
14	7.20	.500	1030	1200	72.09
16	5.23	.312	560	660	52.36
16	5.74	.344	620	720	57.48
16	6.25	.375	680	790	62.58
18	5.90	.312	500	580	59.03
18	6.48	.344	550	640	64.82
18	7.05	.375	600	700	70.59
20	6.57	.312	450	520	65.71
20	7.21	.344	500	580	72.16
20	7.86	.375	540	630	78.60

"S" denotes standard weights.

"X" denotes extra strong weights.

SPIRAL-WELD STEEL PIPE



Used extensively for exhaust and vacuum lines, for water lines of all kinds, for material conveying, air piping, and for conveying oil and gas.

Due to continuous spiral reinforcing seam from end to end, this light weight pipe is strong in bursting strength, strength against collapse and longitudinal stiffness.

Sizes 6 to 36 in.; 14 to 3 gauge wall thickness.

Joints: Available with Forged Steel Flanges; slip joints; flexibly-coupled bolted joints; or with ends of each length prepared for field welded joints, or banded and grooved for grooved type couplings.

Coatings: By vertical dipping in hot bath of asphalt and vertical draining; by mill coating on outside only; or galvanized in molten zinc by vertical dipping and draining.

Each length is tested by pressure.

Plain End, Mill Coated on Outside Only

Thickness, ga.	Per foot	Approx. bursting pressure, psi	Wt. per ft., lbs.
	6⅝ in. OD		
14	$1.12	1240	5.56
12	1.43	1737	7.76
10	1.63	2234	9.95
	8⅝ in. OD		
14	$1.27	953	7.25
12	1.61	1334	10.13
10	1.86	1716	13.01
8	2.08	2096	15.86
	10¾ in. OD		
14	$1.53	764	8.91
12	1.90	1071	12.45
10	2.20	1377	16.00
8	2.52	1682	19.53
	12¾ in. OD		
14	$1.70	644	10.42
12	2.13	903	14.57
10	2.46	1161	18.71
8	2.75	1418	23.04
7	3.06	1547	24.88
3	4.08	2063	33.08
	14 in. OD		
14	$1.95	587	11.45
12	2.40	822	16.01
10	2.77	1057	20.57
	14 in. OD (Cont'd)		
8	$3.48	1291	25.17
7	3.93	1409	27.37
3	4.62	1879	36.40
	16 in. OD		
14	$2.25	514	13.04
12	2.76	719	18.24
10	3.16	925	23.42
8	3.65	1130	28.60
7	3.97	1233	31.18
3	5.28	1644	41.47
	18 in. OD		
14	$2.54	457	14.68
12	3.12	639	20.53
10	3.57	822	26.37
8	4.10	1004	32.22
7	4.47	1096	35.11
3	5.96	1461	46.75
	20 in. OD		
14	$2.82	411	16.32
12	3.46	576	22.83
10	3.98	740	29.33
8	4.56	904	35.82
7	4.98	986	39.06
3	6.63	1315	52.00

Dipped Pipe and Galvanizing Extras

The following net extras per foot are for pipe hot dipped in asphaltum.

Size, in.	6⅝	8⅝	10¾	12¾	14	16	18	20
Per foot	$0.044	.058	.072	.086	.10	.128	.144	.16

The net extra for hot galvanizing is 20% of the pipe list price.

Note that special prices will apply for galvanizing lengths longer than 20 feet or diameters larger than 36 inches.

FLANGES FOR SPIRAL-WELD PIPE

Forged Steel

ID of flange as specified by purchaser.

Pipe size, in.	Each	OD, in.	Thickness, in.	Lgth., in.	Hub diam., in.	No. of holes	Diam. holes, in.	Bolt circle, in.
			Taylor Forge Standard					
* 6	$11.10	9	½	1¼	6¾	8	⅝	7⅞
* 8	13.00	11	½	1¼	8¾	8	⅝	10
*10	17.00	14	½	1¼	10⅞	12	¾	12¼
*12	26.00	16	½	1¼	12⅞	12	¾	14¼
14	38.00	18	⅝	1¼	14⅞	12	¾	16¼
16	57.00	21¼	⅝	1¼	17¼	16	¾	19¼
18	79.00	23¼	⅝	1¼	19¼	16	¾	21¼
20	89.00	25¼	⅝	1¼	21¼	20	¾	23⅛
			125 lb. American Standard					
6	$14.00	11	9/16	1¼	7 9/16	8	⅞	9½
8	20.00	13½	9/16	1¼	9 11/16	8	⅞	11¾
10	25.00	16	11/16	1¼	12	12	1	14¼
12	45.00	19	11/16	1¼	14⅜	12	1	17
14	64.00	21	¾	1¼	15¾	12	1⅛	18¾
16	79.00	23½	¾	1¼	18	16	1⅛	21¼
18	105.00	25	¾	1¼	19⅞	16	1¼	22¾
20	118.00	27½	¾	1¼	22	20	1¼	25

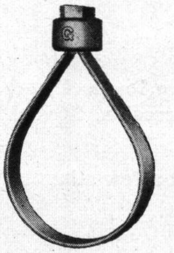
*These flanges for use with pipe with IPS OD.

Pipe fitted with flanges, prices on request.

Note—Taylor Forge Light Wall fittings are available for Spiral-Weld Pipe. Prices on Request.

PIPE HANGERS

ADJUSTABLE WROUGHT RING



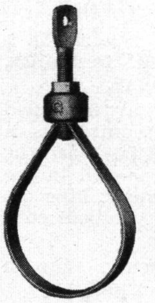
No. 97—Steel Ring

Consists of a steel ring supported by a malleable iron adjusting nut threaded for hanger rod.

Before the rod is screwed through the nut, the ring may be sprung together for removal from the nut and spread sufficiently to go over the pipe. Screwing rod through nut prevents any separation of ring and nut.

Size pipe, in.	Per 100	Threaded for rod, in.	Wt. per 100, lbs.
½	$ 9.50	⅜	16
¾	9.75	⅜	16½
1	10.00	⅜	17
1¼	10.25	⅜	17½
1½	10.50	⅜	18
2	11.00	⅜	19
2½	16.50	½	36
3	17.50	½	38
3½	18.00	½	40
4	33.00	⅝	80
5	36.00	⅝	88
6	56.00	¾	135
8	91.00	⅞	245

Open stock.



No. 95—With Flattened End Bolt

A combination of No. 97 above and the flattened end bolt.

May be used directly with I-beam clamp No. 131, or with perforated extension bar.

Size pipe, in.	Per 100	Wt. per 100, lbs.	Size pipe, in.	Per 100	Wt. per 100, lbs.
½	$20.50	23½	3	$31.50	54
¾	20.75	24	3½	32.00	56
1	21.00	24½	4	57.00	112
1¼	21.25	25	5	60.00	120
1½	21.50	25½	6	92.00	190
2	22.00	26½	8	163.00	335
2½	30.50	52			

Open stock.

STANDARD RING AND BOLT

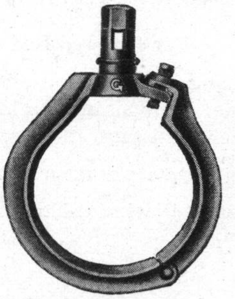
No. 320—Steel, Adjustable

Size pipe, in.	Each	Wt. per 100, lbs.	Size pipe, in.	Each	Wt. per 100, lbs.
½	$ 5.00	9	3½	$16.50	53
¾	5.25	11	4	18.50	68
1	5.75	13½	5	26.00	81
1¼	6.25	15½	6	29.00	164
1½	6.50	17½	8	75.00	215
2	10.00	21½	10	115.00	265
2½	12.00	40	12	185.00	308
3	13.00	50			

Open stock.

PIPE HANGERS

ADJUSTABLE SPLIT RING, SWIVELED

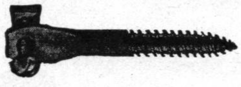


No. 104—Malleable Iron

Can be used with coach screw rod or machine threaded rod. Swivel shank allows adjustment, yet automatically locks in position. Off-center hinge provides efficient seating for pipe while open.

Size pipe, in.	Per 100	Threaded for rod, in.	Wt. per 100, lbs.
¾	$ 41.40	⅜	30
1	43.40	⅜	32
1¼	46.40	⅜	37
1½	52.40	⅜	42
2	58.40	⅜	47
2½	67.20	½	75
3	77.20	½	93
3½	105.20	½	126
4	124.00	⅝	180
5	172.00	⅝	257
6	218.00	¾	400
8	375.00	⅞	612

FLATTENED LAG SCREWS



No. 219—Gimlet Pointed, with Bolt

Size, Nos.	Per 100	Size, in.	For pipe, in.	Eye bolt, in.	Wt. per 100, lbs.
1	$ 7.50	5/16x3	½ to 1½	¼	7
2	9.00	⅜x4	2 to 3	¼	15
3	13.00	½x5	3½ to 6	5/16	29
4	21.00	⅝x5½	8	⅜	54
5	27.00	¾x6	10 to 12	½	100

FLATTENED END BOLTS

No. 96—Forged Steel

Size, Nos.	Per 100	Pipe size, in.	Bolt size, in.	Lgth. thd., in.	Hole, in.	Wt. 100, lbs.
1	$11.00	½–2	⅜	2	9/32	8
2	14.00	2½–3½	½	2½	11/32	16
3	24.00	4–5	⅝	3	13/32	32
4	36.00	6	¾	3¾	13/32	55
5	72.00	8	⅞	4½	17/32	90

SOCKETS

Malleable Iron

Available with pipe thread or rod thread. Black finish.

No. 110—Pipe Thread

Pipe size, in.	Per 100	Threads, in.	Wt. per 100, lbs.
½–1	$ 6.50	⅛	8
1¼–3	7.00	¼	15
3½–4	8.50	⅜	21
5 –6	13.00	½	32
8	18.00	¾	47

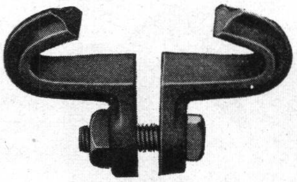
No. 110-R—Rod Thread

½–2	$ 6.50	⅜	8
2½–3½	7.00	½	15
4 –5	8.50	⅝	21
6	13.00	¾	32
8	18.00	⅞	47

All above, open stock.

PIPE HANGERS

I-BEAM CLAMPS



No. 131—Malleable Iron

Designed for use on American Standard I-beams.

Size of bolt ⅜x1½ in. Distance from bottom of beam to center bolt approximately 1¼ in.

In ordering specify width of I-beam and space between halves of clamps.

Beam flange width, in.	Black, per 100	Galvanized, per 100	Wt. per 100, lbs.
2	$31.00	$36.00	44
2½	33.00	38.00	49
3	36.00	42.00	57
3½	38.00	45.00	61
4	39.00	46.00	66
4½	40.00	47.00	69
5	43.00	51.00	75
5½	44.00	53.00	84
6	53.00	62.00	87

Open stock.

Note—Regularly furnished in black; galvanized on special order only.

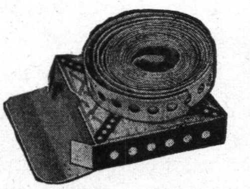
PERFORATED EXTENSION BAR

In 10 Foot Lengths

Soft steel; can be cut easily with a cold chisel.

Size Nos.	0	2
Width, in.	¾	1
Gauge Nos.	16	14
Size hole, in.	¼	5/16
C. to C. of holes, in.	½	⅝
Wt. per 100 ft., lbs.	13	25
Per 100 feet	$4.10	5.40

100 feet in a bundle.



Zinc Plated, In 10 Foot Coils

Per carton

No. 500-M—¾ in. wide, 20 gauge, ¼ in. holes, ½ in. hole centers; wt. per carton 20 lbs. $9.36

One coil in a box, twenty-four in a counter display carton.

PIPE STRAPS

STEEL

Galvanized

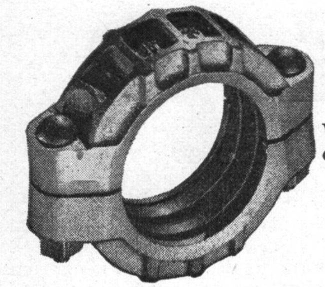
Corrugated or ribbed.

Size pipe, in.	Per pound	Wt. per 100, lbs.	Size pipe, in.	Per pound	Wt. per 100, lbs.
¼	$0.38	2	1	$0.36	7
⅜	.38	3	1¼	.36	8½
½	.36	3¼	1½	.36	9
¾	.36	5	2	.36	11¼

Open stock.

PIPE COUPLINGS

GRUVAGRIP



For Grooved End Pipe

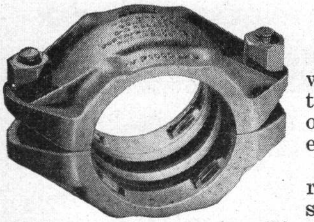
Constructed of high quality malleable iron to insure maximum strength and resistance to shock and vibration. Special coating on all external parts maintains highest possible resistance to corrosion. Special composition gasket is highly oil and acid resistant.

Anyone without special tools or training, can make a tight, permanent connection in just a few minutes.

Angular deflection indicated in the following table.

Nos.	Pipe size, in.	Each	Pipe OD, in.	Max work. pressure, lbs. per sq. in.	End pull at max. working pres-sures, lbs.	No. of bolts	Size bolts, in.	Nominal deflection from centerline Degrees in one coupling	Nominal deflection from centerline Inches in 20 ft. length pipe	Radius to which pipe can be laid, ft.	Net wt. each, lbs.
GBR- 15	1½	$ 1.36	1.90	1000	2,835	2	½x2½	4°–15′	17.83	135	2.45
GBR- 20	2	1.47	2.375	1000	4,430	2	½x2½	3°–13′	13.5	178	2.87
GBR- 25	2½	1.76	2.875	1000	6,492	2	½x2¾	2°–52′	12.0	200	3.46
GBR- 30	3	1.99	3.50	1000	9,621	2	½x2¾	2°– 9′	9.0	267	4.18
GBR- 35	3½	2.35	4.00	1000	12,566	2	⅝x2¾	2°– 4′	8.62	278	5.85
GBR- 40	4	3.00	4.50	1000	15,904	2	⅝x3¼	3°– 0′	12.5	194	6.16
GBR- 50	5	4.68	5.563	1000	24,301	2	¾x4¼	2°–11′	9.18	262	11.47
GBR- 60	6	5.60	6.625	1000	34,472	2	¾x4¼	1°–13′	5.06	475	12.79
GBR- 80	8	9.33	8.625	800	46,720	2	⅞x5	1°–37′	6.75	356	22.73
GBR-100	10	13.06	10.75	800	72,610	2	1 x6	1°–21′	5.62	428	32.46
GBR-120	12	15.17	12.75	800	102,144	2	1 x6½	1°– 5′	4.5	535	42.45

ROLAGRIP



For Plain or Beveled End Steel Pipe and Tubing

Cast from malleable iron and fitted with case hardened, cadmium plated, toothed steel rollers. Special coating on all external parts maintains highest possible resistance to corrosion.

The pipe is firmly gripped by the rollers which embed themselves in the surface of the pipe and the recesses of the coupling housing. The recesses in which the rollers operate are proportioned to allow for normal expansion and contraction and to permit an average angular deflection of 5 degrees over the different sizes.

One man, a common laborer with a wrench, can install these couplings as fast as he can screw up the nuts.

Three types of gaskets are available for Rolagrip Couplings—natural rubber, Rolaprene and Rolakem.

When ordering, specify type of service so proper gasket may be furnished.

Nos.	Pipe size, in.	Each	Pipe OD, in.	Work press., lbs.	No. of rollers	Bolt size, in.	Width gasket, in.	Net wt. each, lbs.
Regular Sizes								
1½ to 6 in., 2 bolts; 8 to 12 in., 4 bolts.								
15L	1½	$ 2.70	1.900	1000	4	½x2½	1 1/16	4½
20L	2	3.65	2.375	1000	4	⅝x2¼	1 19/32	7½
25L	2½	4.05	2.875	1000	4	⅝x2¼	1 19/32	8¼
30L	3	6.05	3.500	1000	8	¾x3½	1 19/32	13⅝
35L	3½	6.45	4.000	1000	8	¾x3½	1 53/64	15¼
40L	4	7.00	4.500	1000	8	¾x3½	1 53/64	16 7/16
50L	5	10.10	5.563	1000	16	1 x4	1 61/64	24¼
60L	6	12.25	6.625	800	16	1 x4	1 61/64	27 13/16
800	8	22.50	8.625	1000	32	⅞x5	2 1/16	48
1000	10	28.85	10.750	800	40	⅞x5	2 1/16	55 1/16
1200	12	35.70	12.750	600	52	1 x5	2 1/16	63
Tube Sizes								
All sizes have 2 bolts.								
40T	4OD	$6.45	4.00	1000	8	¾x3½	17/32	12⅞
50T	5OD	7.80	5.00	1000	8	¾x3½	17/32	14¼
60TS	6OD	9.25	6.00	500	12	1 x4	17/32	16⅜
70C	7OD	14.00	7.00	800	20	1 x4	17/32	25½

DRESSER STEEL

No. 38—For Plain End Steel Pipe

Provide all the attributes required in a pipe joint—simplicity, speed, flexibility, tightness, strength and economy.

Unskilled "pick-up" labor only is needed to install. The only tool required is a wrench. Lines can be assembled above the ditch. No working space is needed in the ditch and it can be very narrow. Pipe too thin for threading can be coupled with Dressers.

A few Dressers without center stops in the pipe line act as expansion points

Dressers permit deflection at each joint so pipe may be laid up or down grade and in curves. Dressers will stand more pressure than the pipe in which they are used.

Armored jackets are available for Cathodic protection or to provide electrical conductivity.

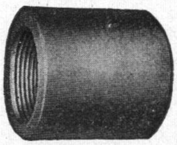
With Plain Gaskets

For Pipe, in. Nominal size	For Pipe, in. OD, in.	Middle ring thickness and lgth., in.	Each	No. and size of bolts, in.	Work pressure, lbs.	Ship. wt. each, lbs.
4ID	4.500	3/16x4	$ 2.55	3–½x 6	1125	8
4ID	4.500	¼x5	3.72	4–⅝x 8	1460	9
6ID	6.625	3/16x4	3.47	4–½x 6	787	12
6ID	6.625	¼x5	5.35	6–⅝x 8	1035	25
6ID	6.625	¼x7	5.83	6–⅝x10	1035	29
8ID	8.625	3/16x4	4.70	6–½x 6	617	15
8ID	8.625	¼x5	6.36	6–⅝x 8	811	31
8ID	8.625	¼x7	6.89	6–⅝x10	811	36
8ID	8.625	5/16x5	7.57	6–⅝x 8½	1000	36
8ID	8.625	5/16x7	8.18	6–⅝x10½	1000	42
10ID	10.750	¼x5	7.79	8–⅝x 8	660	41
10ID	10.750	¼x7	8.45	8–⅝x10	660	47
10ID	10.750	5/16x5	9.09	8–⅝x 8½	815	48
10ID	10.750	5/16x7	9.83	8–⅝x10½	815	57
12ID	12.750	¼x5	9.15	8–⅝x 8	561	47
12ID	12.750	¼x7	9.88	8–⅝x10	561	54
12ID	12.750	5/16x5	10.67	8–⅝x 8½	694	57
12ID	12.750	5/16x7	11.51	8–⅝x10½	694	65

All above, open stock.

WROUGHT STEEL PIPE COUPLINGS

STANDARD



All dimensions are nominal.

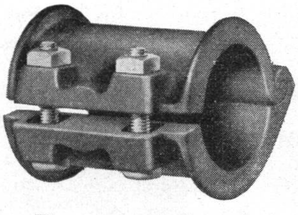
All weights are nominal.

Size, in.	Black, per 100	Galvanized, per 100	Length, in.	No. in a carton	Wt. 100 pcs, lbs.
⅛	$ 3.95	$ 5.65	13/16	100	3
¼	5.30	7.00	1 3/16	100	7
⅜	6.00	7.70	1 3/16	100	9
½	7.95	9.45	1 9/16	100	18
¾	11.40	13.95	1⅝	50	26
1	16.70	20.50	2	30	40
1¼	20.20	24.40	2 1/16	25	50
1½	27.60	33.30	2 1/16	25	70
2	42.70	51.80	2⅛	20	100
2½	78.00	96.60	3⅛	...	270
3	119.00	143.80	3¼	...	330
4	191.00	232.20	3½	...	450
6	630.00	734.00	4	...	1100
8	1312.00	1480.00	5¼	...	2346
10	1796.00	1892.00	5¾	...	3202
12	2770.00	2950.00	6⅛	...	4992

Open stock.

EMERGENCY PIPE CLAMPS

SKINNER-SEAL



No. 1000—Complete with Gasket

A malleable iron cylinder, halved, hinged along one side and fitted with bolts on the other side.

For permanently repairing leaks and splits in wrought pipes. Easily and quickly applied under pressure. Long bolts and raised lugs provide wrench convenience.

The crescent shaped pressure equalizing gasket, by concentrating the pressure on the leak, makes a positive, permanent repair.

Enameled to resist rust.

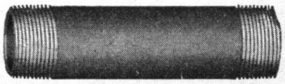
All sizes fitted with 2 bolts.

Size pipe, in.	Each	Lgth., in.	Wt. each, lbs.	Size pipe, in.	Each	Lgth., in.	Wt. each, lbs.
½	$0.60	3¼	1¼	2	$1.20	4¼	3¾
¾	.68	3¼	1½	2½	1.50	4½	4½
1	.75	3½	1¾	3	1.80	4¾	5¾
1¼	.90	3¾	2¾	4	3.00	6	9⅞
1½	1.05	4	3				

½ to 2 in., 12; 2½ to 4 in., 6 in a carton.

WROUGHT STEEL PIPE NIPPLES

STANDARD



Made from select pipe, reamed and chamfered.

List Prices Each

Standard Black, Right Hand Threads

Diam., in.	Lgth. close, in.	Close	Length, inches															
			1½	2	2½	3	3½	4	4½	5	5½	6	7	8	9	10	11	12
⅛	¾	$0.19	$0.19	$0.20	$0.21	$0.22	$0.23	$0.25	$0.27	$0.29	$0.31	$0.33	$0.38	$0.42	$0.46	$0.50	$0.53	$0.57
¼	⅞	.18	.19	.20	.21	.22	.23	.25	.27	.29	.31	.33	.38	.42	.46	.50	.53	.57
⅜	1	.18	.19	.20	.21	.22	.23	.25	.27	.29	.31	.33	.38	.42	.46	.50	.53	.57
½	1⅛	.19	.20	.22	.23	.25	.27	.29	.31	.33	.35	.37	.43	.47	.51	.56	.60	.65
¾	1⅜	.24	...	.26	.27	.29	.31	.33	.36	.39	.42	.45	.52	.58	.63	.69	.74	.80
1	1½	.35	...	.38	.41	.43	.46	.49	.52	.56	.59	.62	.70	.78	.85	.93	1.01	1.09
1¼	1⅝	.44	...	.48	.50	.53	.57	.61	.65	.70	.74	.78	.89	.99	1.09	1.19	1.29	1.39
1½	1¾	.53	...	.56	.61	.65	.70	.75	.80	.85	.90	.95	1.07	1.19	1.31	1.43	1.55	1.67
2	2	.68	...	...	.75	.82	.88	.95	1.02	1.09	1.16	1.23	1.38	1.54	1.70	1.86	2.02	2.18
2½	2½	1.36	...	...	...	1.48	1.60	1.72	1.82	1.94	2.06	2.18	2.45	2.72	2.99	3.26	3.53	3.80
3	2⅝	1.72	...	...	...	1.84	1.98	2.12	2.24	2.39	2.54	2.69	3.04	3.39	3.74	4.09	4.44	4.79
4	2⅞	2.80	...	...	...	....	....	3.36	3.55	3.85	4.15	4.45	4.99	5.54	6.09	6.64	7.19	7.74
6	3⅛	6.57	...	...	...	....	....	....	8.10	8.61	9.11	9.63	10.59	11.55	12.51	13.47	14.43	15.39
8	3½	14.88	...	...	...	....	....	....	....	16.60	17.18	17.76	18.92	20.08	21.24	22.40	23.56	24.72
10	3⅞	20.35	...	...	...	....	....	....	....	21.89	.....	23.47	25.05	26.63	28.21	29.79	31.37	32.95
12	4½	27.00	...	...	...	....	....	....	....	.....	.....	30.44	.....	35.04	37.34	39.64	41.94	44.24

Standard Galvanized, Right Hand Threads

Diam., in.	Lgth. close, in.	Close	Length, inches															
			1½	2	2½	3	3½	4	4½	5	5½	6	7	8	9	10	11	12
⅛	¾	$0.23	$0.23	$0.25	$0.27	$0.29	$0.31	$0.33	$0.35	$0.38	$0.41	$0.44	$0.52	$0.57	$0.62	$0.67	$0.72	$0.77
¼	⅞	.22	.22	.24	.26	.28	.30	.32	.34	.36	.38	.41	.49	.53	.57	.62	.66	.71
⅜	1	.22	.22	.24	.26	.28	.30	.32	.34	.36	.38	.41	.49	.53	.57	.62	.66	.71
½	1⅛	.22	.24	.26	.28	.30	.33	.35	.37	.40	.43	.45	.53	.58	.63	.69	.74	.80
¾	1⅜	.28	...	.31	.33	.35	.38	.41	.44	.48	.51	.55	.64	.71	.77	.85	.92	.99
1	1½	.42	...	.45	.49	.52	.56	.60	.64	.68	.72	.76	.86	.96	1.05	1.15	1.25	1.35
1¼	1⅝	.53	...	.57	.61	.64	.69	.75	.80	.86	.91	.97	1.10	1.23	1.35	1.48	1.60	1.73
1½	1¾	.63	...	.68	.74	.79	.85	.91	.98	1.05	1.11	1.17	1.32	1.47	1.62	1.77	1.92	2.07
2	2	.82	...	...	.91	.99	1.07	1.16	1.25	1.34	1.43	1.52	1.71	1.91	2.11	2.31	2.52	2.72
2½	2½	1.69	...	...	...	1.84	1.99	2.15	2.28	2.43	2.59	2.74	3.09	3.43	3.78	4.12	4.47	4.81
3	2⅝	2.14	...	...	...	2.29	2.47	2.65	2.82	3.01	3.20	3.39	3.84	4.28	4.73	5.18	5.62	6.07
4	2⅞	3.47	...	...	...	....	....	4.19	4.43	4.81	5.19	5.57	6.25	6.95	7.65	8.35	9.05	9.75
6	3⅛	8.09	...	...	...	....	....	....	10.02	10.67	11.30	11.96	13.18	14.39	15.61	16.83	18.05	19.27

Note—Sizes not listed are considered special and are made to order only. Prices upon application.

Weights and Carton Quantities of Standard Black and Galvanized Nipples

Lgth., in.	⅛ in. diam.		¼ in. diam.		⅜ in. diam.		½ in. diam.		¾ in. diam.		1 in. diam.		1¼ in. diam.		1½ in. diam.		2 in. diam.	
	No. in ctn.	Wt. 100 pcs., lbs.	No. in ctn.	Wt. 100 pcs., lbs.	No. in ctn.	Wt. 100 pcs., lbs.	No. in ctn.	Wt. 100 pcs., lbs.	No. in ctn.	Wt. 100 pcs., lbs.	No. in ctn.	Wt. 100 pcs., lbs.	No. in ctn.	Wt. 100 pcs., lbs.	No. in ctn.	Wt. 100 pcs., lbs.	No. in ctn.	Wt. 100 pcs., lbs.
Close	100	1.1	100	2.3	100	3.6	200	5.0	200	17.5	100	14.2	100	20.6	50	29.0	50	43.8
1½	100	2.7	100	4.6	100	5.9	200	7.5	...	....	...	....	...	....	..	....	..	....
2	100	3.6	100	6.3	100	8.5	200	11.0	200	28.4	100	19.9	100	27.7	50	33.8	..	....
2½	100	4.6	100	8.1	100	10.8	200	14.2	200	36.7	100	26.7	100	35.5	50	44.8	50	57.8
3	100	5.6	100	9.8	100	13.2	100	18.0	100	23.4	50	34.6	50	46.6	25	56.8	25	73.2
3½	100	6.6	100	11.8	100	15.5	100	21.5	100	28.1	50	41.6	50	56.0	25	65.2	25	86.8
4	100	7.7	100	13.8	100	18.2	100	24.8	100	33.2	50	47.8	50	64.0	25	79.2	25	101.6
4½	100	8.6	100	15.7	100	20.7	100	28.5	100	38.2	50	53.8	50	71.8	25	88.8	25	112.4
5	100	9.6	100	17.4	100	23.3	100	31.6	100	43.9	50	60.4	50	83.8	25	99.2	25	128.8
5½	100	10.8	100	19.3	100	25.8	100	35.2	100	48.1	50	67.8	50	94.0	25	110.0	25	143.6
6	100	12.2	100	21.0	100	29.1	100	37.6	100	53.2	50	74.4	50	101.8	25	122.8	25	160.8

Open stock.

MALLEABLE IRON PIPE FITTINGS

STANDARD SCREWED

For 150 Pounds Steam Working Pressures; for 300 Pounds Cold Water, Oil or Gas Non-Shock Working Pressures

Made of strong, tough malleable iron; tapped to the American Standard for Pipe Threads. Each opening chamfered slightly to permit easy entrance of pipe and to prevent damage to first thread in handling and shipment. Variations in alignment and tapping size held to a minimum by frequent tests.

90 DEGREE ELBOWS

Straight sizes.

No. 1101—Flat Banded

Size, in.	Black, Each	Galv., Each	No. in a ctn.	Wt. 100 pcs., lbs.
⅛	$0.16	$0.21	35	7.6
¼	.16	.21	30	10.5
⅜	.16	.21	30	16
½	.20	.26	50	23
¾	.25	.33	35	36
1	.32	.42	20	58
1¼	.50	.66	20	97
1½	.68	.88	12	123
2	.97	1.25	8	199
2½	1.85	2.40	..	381
3	2.95	3.85	..	551
4	5.00	6.50	..	852
6	14.50	19.00	..	2224

90 DEGREE REDUCING ELBOWS

No. 1011-R—Flat Banded

The larger opening determines the price.

We can furnish all standard reductions of all sizes listed.

Size, in.	Black, Each	Galv., Each	No. in a ctn.	Wt. 100 pcs., lbs.
⅜x ¼	$0.19	$0.25	25	15.6
½x ⅜	.22	.29	50	23.0
½x ¼	.22	.29	30	19.7
¾x ½	.27	.37	30	35.3
¾x ⅜	.27	.37	30	32.0
1 x ¾	.35	.45	20	54.0
1 x ½	.35	.45	25	47.6
1¼x1	.57	.76	10	90.0
1¼x ¾	.57	.76	15	76.0
1½x1¼	.72	.97	12	119.2
1½x1	.72	.97	12	103.3
1½x ¾	.72	.97	12	92.5
2 x1½	1.05	1.35	10	179.0
2 x1¼	1.05	1.35	10	164.0
2 x1	1.05	1.35	12	140.8
2½	2.00	2.60	..	381
3	3.25	4.25	..	551
4	5.50	7.20	..	852

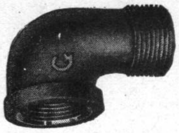
45 DEGREE ELBOWS

No. 1102—Flat Banded

Size, in.	Black, Each	Galv., Each	No. in a ctn.	Wt. 100 pcs., lbs.
⅛	$0.19	$0.25	50	7
¼	.19	.25	35	10
⅜	.19	.25	40	14
½	.21	.28	50	21
¾	.29	.40	40	32
1	.35	.46	25	51
1¼	.60	.80	15	84
1½	.75	.95	12	115
2	1.05	1.35	8	181
2½	2.05	2.65	..	292
3	3.30	4.30	..	451
4	5.30	6.65	..	820
6	16.00	21.00	..	1958

All above, open stock.

90 DEGREE STREET ELBOWS



Straight sizes.

No. 1103—Flat Banded

Size, in.	Black, Each	Galv., Each	No. in a ctn.	Wt. 100 pcs., lbs.
⅛	$0.22	$0.29	40	7
¼	.22	.29	30	10
⅜	.22	.29	30	15
½	.26	.34	50	23
¾	.37	.48	40	37
1	.43	.54	25	59
1¼	.65	.84	15	98
1½	.80	1.05	12	123
2	1.20	1.55	8	237
2½	2.10	2.75	..	351
3	3.25	4.25	..	588
4	5.30	7.00	..	1027

45 DEGREE STREET ELBOWS

No. 1104—Flat Banded

Size, in.	Black, Each	Galv., Each	No. in a ctn.	Wt. 100 pcs., lbs.
⅛	$0.24	$0.31	..	6
¼	.24	.31	..	9
⅜	.24	.31	..	13
½	.28	.35	50	20
¾	.41	.51	40	29
1	.48	.64	..	45
1¼	.72	.96	..	75
1½	.90	1.15	..	107
2	1.35	1.61	..	169

CROSSES

Straight sizes.

No. 1107—Flat Banded

Size, in.	Black, Each	Galv., Each	No. in a ctn.	Wt. 100 pcs., lbs.
⅛	$0.43	$0.43	..	16
¼	.43	.56	..	20
⅜	.43	.56	..	32
½	.53	.71	30	49
¾	.65	.85	20	75
1	.80	1.05	15	113
1¼	1.10	1.45	12	166
1½	1.40	1.80	8	225
2	2.30	3.00	8	351
2½	3.70	4.80	..	589
3	5.50	7.10	..	932
4	10.00	13.00	..	1568
6	29.00	39.00	..	4760

Note—For reducing connections to crosses, bushings of the required size should be used.

Note—The sizes of all pipe fittings are determined by the size pipe for which they are intended.

All above, open stock.

TEES

Straight sizes.

No. 1105—Flat Banded

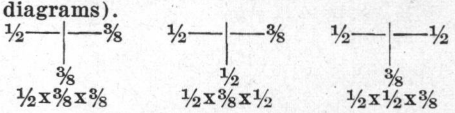
Size, in.	Black, Each	Galv., Each	No. in a ctn.	Wt. 100 pcs., lbs.
⅛	$0.22	$0.28	35	9
¼	.22	.28	35	15
⅜	.22	.28	30	23
½	.28	.36	40	33
¾	.37	.48	35	52
1	.47	.64	20	81
1¼	.78	1.00	15	131
1½	.96	1.25	10	168
2	1.40	1.80	10	259
2½	2.45	3.20	..	473
3	3.30	4.15	..	649
4	6.60	8.60	..	1116
6	18.50	24.00	..	2482

REDUCING TEES

No. 1105-R—Flat Banded

The largest opening determines the price.

In describing reducing tees, the run is first named, then the branch outlet (see diagrams).



Size, in.	Black, Each	Galv., Each	No. in a ctn.	Wt. 100 pcs., lbs.
½x⅜	$0.31	$0.40	35	33.0
½x¼	.31	.40	25	30.0
¾x½	.41	.53	35	52.0
¾x⅜	.41	.53	30	46.0
¾x½x¾	.41	.53	35	52.3
¾x½x½	.41	.53	35	42.2
½x½x¾	.41	.53	30	43.7
1x¾	.53	.70	25	76.0
1x½	.53	.70	15	68.0
1x⅜	.53	.70	20	63.5
1 x¾x1	.53	.70	20	79.5
1 x¾x ¾	.53	.70	20	67.5
1 x¾x ½	.53	.70	20	60.0
1 x½x1	.53	.70	20	74.0
¾x¾x1	.53	.70	20	68.5
1¼x1	.85	1.10	14	118.6
1¼x ¾	.85	1.10	12	104.2
1¼x ½	.85	1.10	15	98.0
1¼x1x1	.85	1.10	14	104.3
1 x1x1¼	.85	1.10	15	110.7
1½x1¼	1.00	1.35	8	165.0
1½x1	1.00	1.35	10	140.0
1½x ¾	1.00	1.35	10	129.0
1½x ½	1.00	1.35	8	120.0
2 x1½	1.55	1.95	8	235.0
2 x1¼	1.55	1.95	8	220.0
2 x1	1.55	1.95	10	199.0
2 x ¾	1.55	1.95	10	183.0
2x1½x2	1.55	1.95	6	257.0
2x1½x1½	1.55	1.95	8	220.0
2½	2.70	3.50	..	473
3	3.60	4.75	..	649
4	7.30	9.50	..	1116
6	20.00	26.00	..	2812

Note—We can furnish all standard reductions of all sizes listed.

Threads on all fittings are **Right Hand** unless otherwise specified.

All above, open stock.

MALLEABLE IRON PIPE FITTINGS

STANDARD SCREWED

For 150 Pounds Steam Working Pressures; for 300 Pounds Cold Water, Oil or Gas Non-Shock Working Pressures.

REDUCERS

No. 1125—Flat Banded

We can furnish all standard reductions of all sizes listed.

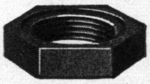
Size, in.	Black, Each	Galv., Each	No. in a ctn.	Wt. 100 pcs., lbs.
¼x ⅛	$0.17	$0.22	25	8.0
⅜x ¼	.17	.22	25	12.0
½x ⅜	.19	.24	30	17.0
½x ¼	.19	.24	25	16.0
¾x ½	.22	.29	50	26.8
¾x ⅜	.22	.29	35	25.2
1 x ¾	.34	.44	25	42.0
1 x ½	.34	.44	30	41.3
1¼x1	.44	.58	15	72.6
1¼x ¾	.44	.58	15	64.2
1½x1¼	.55	.70	15	94.0
1½x1	.55	.70	15	86.6
1½x ¾	.55	.70	15	83.3
2 x1½	.80	1.00	10	154.0
2 x1¼	.80	1.00	10	145.0
2 x1	.80	1.00	10	138.0
2 x ¾	.80	1.00	10	138.0
2½	1.45	1.85	..	210.0
3	2.00	2.50	..	336.0
4	4.00	5.30	..	635.0
6	10.00	13.00	..	1250.0

CAPS

No. 1124—Flat Banded

Size, in.	Black, Each	Galv., Each	No. in a ctn.	Wt. 100 pcs., lbs.
⅛	$0.11	$0.15	50	4
¼	.11	.15	40	6.5
⅜	.11	.15	40	9.0
½	.14	.18	50	15.4
¾	.19	.25	40	23.0
1	.23	.30	25	34.0
1¼	.30	.40	25	52.4
1½	.41	.53	20	67.5
2	.53	.66	15	100.8
2½	.94	1.20	..	191.0
3	1.30	1.75	..	301.0
4	2.35	3.05	..	502.0
6	8.00	10.50	..	1280.0

LOCKNUTS

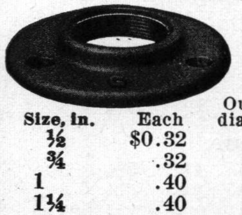


No. 1134—Hexagon

Size, in.	Black, Each	Galv., Each	No. in a ctn.	Wt. 100 pcs., lbs.
⅛	$0.07	$0.09	50	4.6
¼	.07	.09	50	4.0
⅜	.07	.09	50	5.0
½	.09	.11	50	7.2
¾	.11	.14	50	12.6
1	.14	.18	25	17.6
1¼	.18	.23	25	28.0
1½	.25	.32	25	35.6
2	.42	.55	25	52.4

FLOOR FLANGES

STANDARD CAST IRON



No. 1006—Black

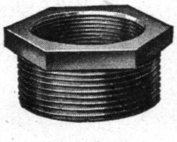
With three screw holes.

Size, in.	Each	Outside diam., in.	Size screws, Nos.	Wt. 100 pcs. lbs.
½	$0.32	3 1/16	14	37
¾	.32	3 7/16	14	61
1	.40	3⅞	18	80
1¼	.40	4¼	18	100
1½	.50	4½	18	109
2	.65	5⅛	18	150

All above, open stock.

PIPE BUSHINGS

HEXAGON



Outside

Inside

Outside Hexagon

No. 1130—Black

No. 1530—Galvanized

Inside Hexagon

No. 1131—Black

No. 1531—Galvanized

Price of bushings is determined by the larger size.

Size, in.	Black, Each	Galv., Each	No. in a ctn.	Wt. 100 pcs., lbs.
¼x ⅛	$0.12	$0.18	50	2.4
⅜x ¼	.12	.18	25	4.0
½x ⅜	.13	.20	25	6.8
½x ¼	.13	.20	25	7.6
½x ⅛	.13	.20	25	6.8
¾x ½	.15	.22	25	11.2
¾x ⅜	.15	.22	25	12.4
¾x ¼	.15	.22	25	11.6
1 x ¾	.17	.26	25	17.6
1 x ½	.17	.26	25	22.0
1 x ⅜	.17	.26	25	23.2
1 x ¼	.17	.26	25	21.6
1¼x1	.21	.32	25	27.6
1¼x ¾	.21	.32	25	36.8
1¼x ½	.21	.32	25	32.0
1½x1¼	.25	.38	30	33.0
1½x1	.25	.38	30	52.3
1½x ¾	.25	.38	30	51.7
1½x ½	.25	.38	30	47.7
2 x1½	.30	.45	20	60.5
2 x1¼	.30	.45	20	86.5
2 x1	.30	.45	20	80.0
2 x ¾	.30	.45	20	75.5
2 x ½	.30	.45	20	81.5
2½	.42	.63	..	124.0
3	.57	.85	..	172.0
4	1.15	1.75	..	295.0
6	2.40	3.60	..	778.0
8	4.50	6.70	..	1106.0

Note—The size determines whether a bushing is outside or inside hexagon; see stock lists.

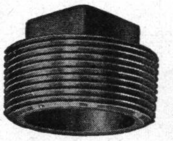
Stock Sizes

Size, in.	Outside Hexagon Cast iron	Outside Hexagon Steel	Outside Hexagon Mall.	Inside hex. cast iron
¼x	......	⅛	...	......
⅜x	......	⅛, ¼	...	......
½x	......	⅛, ¼, ⅜	...	......
¾x	⅛, ¼, ⅜	......	½	......
1 x	½	......	¾	⅛, ¼, ⅜
1¼x	¾	......	1	¼, ⅜, ½
1½x	1	......	1¼	¼, ⅜, ½, ¾
2 x	1¼	......	1½	¼, ⅜, ½, ¾, 1
2½x	1½	......	2	½, ¾, 1, 1¼
3 x	2, 2½	......	...	½, ¾, 1, 1¼, 1½
4 x	3, 3½	......	...	1, 1¼, 1½, 2, 2½
6 x	5	......	...	2, 2½, 3, 3½, 4
8 x	6	......	...	3, 4, 5

Open stock.

PIPE PLUGS

STANDARD CAST IRON



No. 387—Square Head

For 125 lbs. steam working pressures; for 175 lbs. cold water, oil or gas non-shock working pressures.

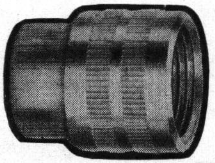
Size, in.	Black, Each	Galv., Each	No. in a ctn.	Wt. 100 pcs., lbs.
⅛	$0.07	$0.12	100	2½
¼	.07	.12	100	4
⅜	.07	.12	100	7
½	.07	.12	100	9
¾	.09	.15	80	13
1	.10	.17	40	22
1¼	.14	.24	40	35
1½	.19	.32	40	50
2	.27	.46	40	77
2½	.46	.78	..	114
3	.65	1.10	..	188
4	1.15	1.95	..	332
6	2.30	3.90	..	944

Open stock.

STEEL PIPE FITTINGS

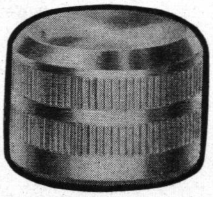
MACHINED, SCREWED

For 150 Pound Service



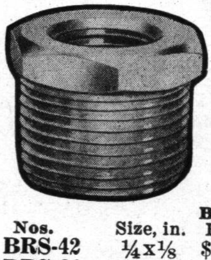
REDUCERS

Nos.	Size, in.	Black, Each	Galv., Each	Lgt., in.	Wt. 100 pcs., lbs.
RS-64	⅜x¼	$0.17	$0.22	1¼	9
RS-84	½x¼	.19	.24	1¼	12
RS-86	½x⅜	.19	.24	1¼	13
RS-126	¾x⅜	.22	.29	1 7/16	19
RS-128	¾x½	.22	.29	1 7/16	18



CAPS

Nos.	Size, in.	Black, Each	Galv., Each	Lgt., in.	Wt. 100 pcs., lbs.
PC-3	⅜	$0.11	$0.15	11/16	7
PC-4	½	.14	.18	25/32	9
PC-6	¾	.19	.25	27/32	13



BUSHINGS

Outside Hexagon

Nos.	Size, in.	Black, Each	Galv., Each	Lgt., in.	Wt. 100 pcs., lbs.
BRS-42	¼x⅛	$0.12	$0.18	⅝	2
BRS-64	⅜x¼	.12	.18	⅝	3
BRS-84	½x¼	.13	.20	¾	9
BRS-86	½x⅜	.13	.20	¾	5
BRS-126	¾x⅜	.15	.22	⅞	14
BRS-128	¾x½	.15	.22	⅞	10
BRS-168	1x½	.17	.26	1	20
BRS-1612	1x¾	.17	.26	1	15

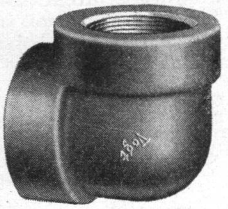
Above, twenty-five in a carton.

FORGED STEEL PIPE FITTINGS

SCREWED

For 3000 and 6000 Pound Cold Water, Oil, Gas or Air Non-Shock Working Pressures

Bored from solid drop forgings; threads are long, accurately cut and perfectly aligned.

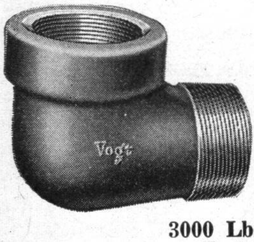


90 DEGREE ELBOWS

Size, in.	3000 Lbs. Each	3000 Lbs. Wt. ea., lbs.	6000 Lbs. Each	6000 Lbs. Wt. ea., lbs.
⅛	$0.55	¼	$ 0.55	½
¼	.55	¼	.55	½
⅜	.55	½	.65	¾
½	.65	⅝	.75	1¼
¾	.75	1	.90	1¾
1	.90	1¼	1.20	2¾
1¼	1.20	2	1.50	3¾
1½	1.50	2½	1.90	8½
2	1.90	6½	2.90	10½
2½	2.90	7½	5.00	14½
3	5.00	13¼	12.50	39

45 DEGREE ELBOWS

Size, in.	3000 Lbs. Each	3000 Lbs. Wt. ea., lbs.	6000 Lbs. Each	6000 Lbs. Wt. ea., lbs.
⅛	$0.68	¼	$ 0.68	½
¼	.68	⅜	.68	½
⅜	.68	½	.78	½
½	.78	½	.90	1
¾	.90	¾	1.08	1¼
1	1.08	1	1.44	2
1¼	1.44	1½	1.80	2½
1½	1.80	2	2.28	6½
2	2.28	5	3.48	8½
2½	3.48	6¼	6.00	15
3	6.00	10½	14.00	29



90 DEGREE STREET ELBOWS

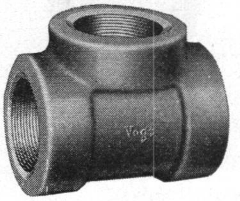
Size, in.	3000 Lbs. Each	Wt. ea., lbs.
¼	$0.75	⅜
⅜	.85	½
½	.85	½
¾	1.05	¾
1	1.40	1
1¼	2.00	1½

REDUCING FITTINGS

Reducing fittings are bored from straight size blanks and can be furnished promptly.

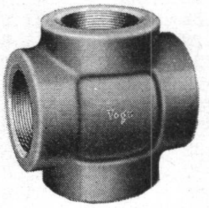
Prices on request.

All above, open stock.



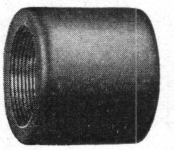
TEES

Size, in.	3000 Lbs. Each	3000 Lbs. Wt. ea., lbs.	6000 Lbs. Each	6000 Lbs. Wt. ea., lbs.
⅛	$0.80	¼	$ 0.80	¾
¼	.80	¼	.80	¾
⅜	.80	½	.95	1
½	.95	¾	1.10	1½
¾	1.10	1¼	1.35	2¼
1	1.35	1¾	1.75	3¾
1¼	1.75	2½	2.30	4½
1½	2.30	3¾	2.90	11
2	2.90	8	4.40	14
2½	4.40	9½	7.50	24
3	7.50	17	17.00	53



CROSSES

Size, in.	3000 Lbs. Each	3000 Lbs. Wt. ea., lbs.	6000 Lbs. Each	6000 Lbs. Wt. ea., lbs.
⅛	$1.10	⅜	$ 1.10	¾
¼	1.10	⅜	1.10	¾
⅜	1.10	¾	1.30	1¼
½	1.30	1	1.50	2
¾	1.50	1½	1.90	3
1	1.90	2¼	2.80	4½
1¼	2.80	3¼	3.50	6
1½	3.50	4½	5.00	9½
2	5.00	6½	7.30	15½
2½	7.30	11¾	10.00	22
3	10.00	21½	23.00	60

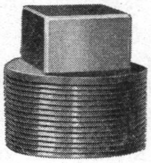


COUPLINGS

Machined From Solid Steel

Size, in.	3000 Lbs. Each	3000 Lbs. Wt. ea., lbs.	6000 Lbs. Each	6000 Lbs. Wt. ea., lbs.
⅛	$0.40	⅛	$ 0.60	¼
¼	.40	⅛	.60	¼
⅜	.40	⅛	.60	⅜
½	.40	¼	.60	⅝
¾	.45	½	.65	1
1	.55	¾	.85	2¼
1¼	.70	1½	1.05	3½
1½	.85	2½	1.30	5½
2	1.15	4	1.75	8¼
2½	1.60	6½	2.40	13½
3	2.75	8¼	4.75	18½

All above, open stock.

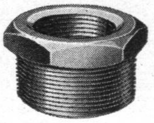


PLUGS

Square Head

Machined from solid steel.

Size, in.	Each	Wt. ea., lbs.	Size, in.	Each	Wt. ea., lbs.
⅛	$0.25	1/32	1½	$0.75	1¼
¼	.25	1/16	2	1.50	2¼
⅜	.25	3/32	2½	3.00	2¾
½	.25	⅛	3	5.00	3½
¾	.30	5/16	3½	5.75	6¼
1	.35	7/16	4	6.50	8¾
1¼	.50	13/16			



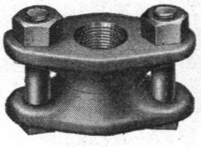
BUSHINGS

Hexagon

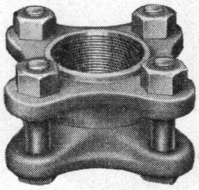
Machined from solid steel.

Size, in.	Each	Wt. ea., lbs.
¼x ⅛	$0.45	1/16
⅜x ¼ and less	.45	1/16
½x ⅜ and less	.45	1/16
¾x ½ and less	.45	⅛
1 x ¾ and less	.50	3/16
1¼x1 and less	.66	⅜
1½x1¼ and less	.83	⅜
2 x ¾ and less	1.20	1 9/16
2 x1 and more	1.32	1 9/16
2½x1¼ and less	4.50	2⅛
2½x1½ and more	5.00	1⅞
3 x1½ and less	7.25	3
3 x2 and more	8.00	3

GROUND JOINT FLANGE UNIONS



Oval



Square

For 2500 Lbs. Cold Working Pressure

Complete flange unions furnished unless otherwise specified. Price for flange union includes two flanges and necessary bolt. Carbon steel machine bolts regularly furnished, oval flanges have 2 bolts; square flanges 4 bolts.

Nos.	Flange Union, each	Single Flange, each	Pipe size, in.	Outs. size, in.	Wt. each, lbs.
		Oval			
2391	$2.00	$0.90	¼	3¾	2¼
2392	2.00	.90	⅜	3¾	2¼
2393	2.40	1.10	½	3¾	2¼
2394	3.20	1.30	¾	4¾	4
2395	3.80	1.70	1	4¾	4
		Square			
2396	$6.00	$2.20	1¼	5⅝	8
2397	7.00	2.70	1½	5⅝	8
2398	20.00	8.80	2	7 13/16	23
2399	34.00	15.00	2½	8 13/16	40

All above, open stock.

WELDING PIPE FITTINGS

TAYLOR SEAMLESS STEEL

Standard Wall; for Use With Standard Weight Pipe

Forged and formed seamless; engineered for uniform strength. All sections are at least full pipe thickness. Tangents remove the weld from the curve and, with the machine-tool beveled ends, make the welding a simple, straight-away operation. Ends are marked in quarters, meaning faster lining up and less layout work in the field.

90 DEGREE ELBOWS

Long Radius

Pipe size, in.	Each	Nominal dimensions: Outside diam., in.	Nominal dimensions: Wall thickness, in.	Center to end, in.	Wt. each, lbs.
¾	$ 1.00	1.050	.113	1⅛	¼
1	1.20	1.315	.133	1½	⅜
1¼	1.40	1.660	.140	1⅞	½
1½	1.70	1.900	.145	2¼	¾
2	2.10	2.375	.154	3	1¾
2½	3.40	2.875	.203	3¾	3½
3	4.90	3.500	.216	4½	5
4	7.65	4.500	.237	6	9¼
6	15.80	6.625	.280	9	25
8	30.00	8.625	.322	12	50
10	53.40	10.750	.365	15	86
12	80.70	12.750	.375	18	130

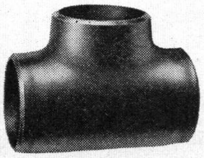
Note—Prices and information on larger sizes available on request.

45 DEGREE ELBOWS

Pipe size, in.	Each	Nominal dimensions: Outside diam., in.	Nominal dimensions: Wall thickness, in.	Center to end, in.	Wt. each, lbs.
¾	$ 0.90	1.050	.113	9/16	⅛
1	1.08	1.315	.133	⅞	⅛
1¼	1.26	1.660	.140	1	¼
1½	1.53	1.900	.145	1⅛	⅓
2	1.90	2.375	.154	1⅜	1
2½	3.05	2.875	.203	1¾	1½
3	4.40	3.500	.216	2	2½
4	6.90	4.500	.237	2½	5
6	14.25	6.625	.280	3¾	12
8	27.00	8.625	.322	5	25
10	48.00	10.750	.365	6¼	41
12	72.75	12.750	.375	7½	65

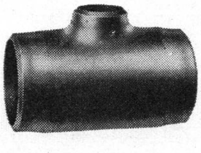
Note—Prices and information on larger sizes available on request.

TEES



Straight and Reducing on Branch

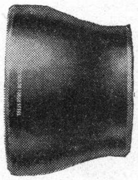
We can furnish all standard reductions. Dimensions are for straight tees and run of reducing tees.



Pipe size, in.	Straight, each,	Reducing, each,	Nominal dimesions: Outs. diam., in.	Nominal dimesions: Wall thickness, in.	Cent. to end, in.	Wt. each, lbs.
¾	$ 2.15	$......	1.050	.113	1⅛	½
1	2.15	2.70	1.315	.133	1½	¾
1¼	2.90	3.60	1.660	.140	1⅞	1¼
1½	3.65	4.55	1.900	.145	2¼	1¾
2	5.00	6.25	2.375	.154	2½	3¼
2½	7.30	9.10	2.875	.203	3	6
3	9.50	11.85	3.500	.216	3⅜	7
4	13.00	16.25	4.500	.237	4⅛	14
6	28.00	35.00	6.625	.280	5⅝	35
8	45.00	56.25	8.625	.322	7	63
10	76.00	95.00	10.750	.365	8½	100
12	110.00	137.50	12.750	.375	10	165

Note—Prices and information on larger sizes available on request.

All above, open stock.

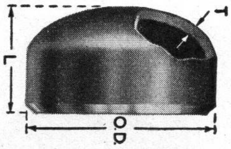


REDUCERS

Concentric

Pipe size, in.	Each	Lgth., in.	Wt. ea., lbs.	Pipe size, in.	Each	Lgth., in.	Wt. ea., lbs.
1 x ¾	$1.50	2	.41	4x 2½	$ 4.00	4	3¼
1 x ½	1.50	2	.41	4x 2	4.00	4	3¼
1 x ⅜	1.50	2	.41	4x 1½	4.50	4	3¼
1¼x1	2.00	2	.59	4x 1¼	4.50	4	3¼
1¼x ¾	2.00	2	.50	4x 1	4.50	4	3¼
1¼x ½	2.50	2	.50	5x 4	6.00	5	6
1½x1¼	2.00	2½	.96	6x 5	8.00	5½	8
1½x1	2.00	2½	.64	6x 4	8.00	5½	8
1½x ¾	2.50	2½	.75	6x 3½	9.00	5½	7
1½x ½	2.50	2½	.75	6x 3	9.00	5½	7
2 x1½	2.25	3	.93	6x 2½	9.00	5½	7
2 x1¼	2.25	3	.87	8x 6	12.00	6	13
2 x1	2.25	3	.78	8x 5	15.00	6	12
2 x ¾	2.75	3	.69	8x 4	15.00	6	11
2½x2	2.50	3½	1½	8x 3½	15.00	6	11
2½x1½	2.75	3½	1¼	8x 3	18.00	6	11
2½x1¼	2.75	3½	1¼	10x 8	18.00	7	22
2½x1	2.75	3½	1¼	10x 6	20.00	7	22
2½x1	2.75	3½	1¼	10x 5	26.00	7	20
3 x2½	3.00	3½	2	10x 4	26.00	7	20
3 x2	3.00	3½	1¾	12x10	32.00	8	30
3 x1½	3.25	3½	1½	12x 8	36.00	8	28
3 x1¼	3.25	3½	1½	12x 6	36.00	8	28
3 x1	3.25	3½	1½	12x 5	40.00	8	26
4 x3½	4.00	4	3¾	12x 4	40.00	8	26
4 x3	4.00	4	3¼				

Note—Prices and information on larger sizes available on request.



CAPS

Ellipsoidal in Shape

2 to 1 axis ratio per ASME Code.

Pipe size, in.	Each	Nominal dimensions: Outside diam., in.	Nominal dimensions: Wall thickness, in.	Nominal dimensions: Lgth. over all, in.	Wt. each, lbs.
1	$ 1.70	1.315	.133	1½	½
1¼	1.70	1.660	.140	1½	⅝
1½	1.70	1.900	.145	1½	1
2	1.85	2.375	.154	1½	1½
2½	2.00	2.875	.203	1½	1½
3	2.40	3.500	.216	2	2½
4	3.70	4.500	.237	2½	3½
6	5.95	6.625	.280	3½	8
8	10.10	8.625	.322	4	12
10	14.60	10.750	.365	5	21
12	20.85	12.750	.375	6	31

Note—Prices and information on larger sizes available on request.

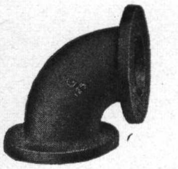
All above, open stock.

CAST IRON PIPE FITTINGS

STANDARD FLANGED

For 125 Pounds Steam Working Pressure, for 175 Pounds Cold Water, Oil or Gas Non-Shock Working Pressures
Black, Flanges Faced and Drilled

The dimensions and drillings of these fittings conform to the 125 lb. American Cast Iron Flanged Fitting Standard. Plain faces.



90 DEGREE ELBOWS

No. 801—Black

Straight sizes.

Size, in.	Faced and Drilled, each	Diam. of flanges, in.	Wt. each, lbs.
2	$ 7.20	6	13
2½	8.10	7	19
3	9.40	7½	25
4	12.50	9	41
6	21.50	11	82
8	33.00	13½	130
10	60.00	16	214
12	86.00	19	297

LONG SWEEP 90 DEGREE ELBOWS

No. 804—Black

Size, in.	Faced and Drilled, each	Diam. of flanges, in.	Wt. each, lbs.
2	$12.00	6	16
2½	13.50	7	23
3	15.00	7½	29
4	19.50	9	49
6	31.00	11	86
8	54.00	13½	146
10	81.00	16	259
12	130.00	19	385

45 DEGREE ELBOWS

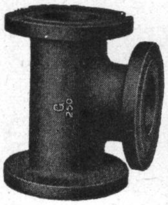
No. 802—Black

Size, in.	Faced and Drilled, each	Diam. of flanges, in.	Wt. each, lbs.
2	$ 8.30	6	11
2½	9.30	7	16
3	11.00	7½	19
4	14.50	9	34
6	22.00	11	57
8	33.00	13½	89
10	59.00	16	144
12	86.00	19	223

All above, open stock.

Note—Flanged fittings furnished "Faced Only" at no reduction in list.

Note—The dimensions and drilling of these fittings conform to the 125 lb. American Flanged Fitting Standard. See page 106.

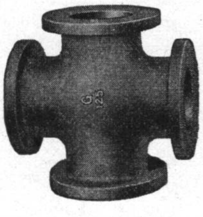


TEES

No. 811—Black

Straight sizes.

Size, in.	Faced and Drilled, each	Diam. of flanges, in.	Wt. each, lbs.
2	$ 9.50	6	20½
2½	11.00	7	28½
3	12.00	7½	35
4	20.00	9	60
6	29.00	11	97
8	43.00	13½	159
10	86.00	16	255
12	108.00	19	406



CROSSES

No. 821—Black

Straight sizes.

Size, in.	Faced and Drilled, each	Diam. of flanges, in.	Wt. each, lbs.
2	$17.50	6	28
2½	19.00	7	38
3	21.00	7½	49
4	30.00	9	80
6	49.00	11	126
8	76.00	13½	168
10	113.00	16	270
12	162.00	19	404

45 DEGREE LATERALS

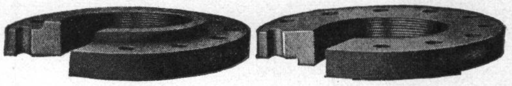
No. 823—Black

Straight sizes.

Size, in.	Faced and Drilled, each	Diam. of flanges, in.	Wt. each, lbs.
2	$20.00	6	25
2½	22.00	7	33
3	24.50	7½	45
4	34.00	9	71
6	58.00	11	125
8	86.00	13½	216
10	130.00	16	336
12	189.00	19	531

All above, open stock.

COMPANION FLANGES

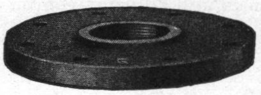


Hub side Plain face

No. 1011—Black

Size, in.	Faced and Drilled, each	Wt. each, lbs.
2 x 6	$ 1.70	5.2
2½x 7	1.87	6
3 x 7½	2.30	7.5
4 x 9	3.45	11.9
6 x11	5.00	16.6
8 x13½	7.50	27.5
10 x16	11.00	38
12 x19	15.00	60

REDUCING COMPANION FLANGES



No. 1016—Black

Size, in.	Faced and Drilled, each	Wt. each, lbs.
2 x 7	$ 2.70	6.4
2 x 7½	3.45	7.4
2½x 7½	3.45	7.1
3 x 8½	4.35	9
2 x 9	5.20	14
2½x 9	5.20	14
3 x 9	5.20	13.4
3 x10	6.25	16
4 x10	6.25	15
2 x11	7.50	22.4
3 x11	7.50	20.8
4 x11	7.50	19.3
3 x13½	11.20	41.5
4 x13½	11.20	38.7
6 x13½	11.20	33.0
6 x16	16.50	54.0
8 x16	16.50	47.0
8 x19	22.50	80.0
10 x19	22.50	72.0

BLIND FLANGES

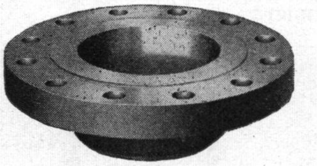
No. 1018—Black

Size, in.	Faced and Drilled, each	Wt. each, lbs.
2 x 6	$ 1.85	4.6
2½x 7	2.05	8
3 x 7½	2.55	8.7
4 x 9	3.85	14.9
6 x11	6.30	22.8
8 x13½	9.30	41.9
10 x16	13.70	61
12 x19	21.00	103.8

All above, open stock.

FORGED STEEL FLANGES

TAYLOR FORGE WELDING NECK



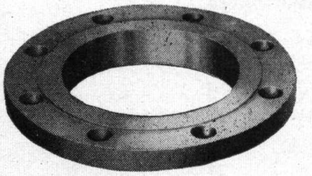
Faced and Drilled, Raised Face

Full ASA length and diameter of hub; full strength. Hub end is machine tool beveled in accordance with ASA requirements. Designed for easy perfect welding.

Pipe size, in.	150 Pound		300 Pound		400 Pound		600 Pound	
	Each	Wt. each, lbs.	Each	Wt. each, lbs.	Each	Wt. each, lbs.	Each	Wt. each, lbs.
½	$11.00	2	$11.00	4	$.....	..	$ 16.30	6
¾	11.00	2	11.00	4	.....	..	16.30	6
1	11.00	2	11.00	4	.....	..	16.30	6
1¼	11.00	3	11.00	6	.....	..	16.30	7
1½	11.00	4	11.00	8	.....	..	16.30	10
2	11.00	6	11.00	9	.....	..	16.30	12
2½	13.00	8	13.00	12	.....	..	19.00	18
3	15.00	10	15.00	15	.....	..	23.00	23
4	20.00	15	20.00	25	20.00	35	39.00	42
6	27.00	24	27.00	42	27.00	57	63.50	81
8	44.00	39	44.00	67	44.00	89	90.00	117
10	62.00	52	62.00	91	62.00	126	138.00	189
12	96.00	80	96.00	138	96.00	177	188.00	226

Note—Prices and information on larger sizes on request.

TAYLOR FORGE SLIP-ON

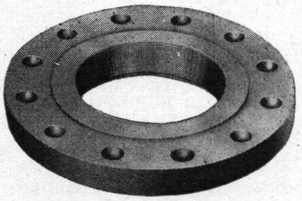


Faced and Drilled; Raised Face

Pipe size, in.	150 Pound		300 Pound		400 Pound		600 Pound	
	Each	Wt. each, lbs.	Each	Wt. each, lbs.	Each	Wt. each, lbs.	Each	Wt. each, lbs.
½	$ 8.00	2	$ 8.00	3	$.....	..	$ 9.50	3
¾	8.00	2	8.00	3	.....	..	9.50	3
1	8.00	2	8.00	3	.....	..	10.00	4
1¼	9.00	3	9.00	4	.....	..	10.75	6
1½	10.00	3	10.00	6	.....	..	11.75	7
2	11.00	5	11.00	7	.....	..	13.00	9
2½	13.00	7	13.00	10	.....	..	15.00	13
3	15.00	8	15.00	16	.....	..	18.50	16
4	20.00	13	20.00	22	20.00	26	33.00	37
6	27.00	19	27.00	39	27.00	44	55.00	80
8	35.00	30	35.00	58	35.00	67	80.00	115
10	48.00	43	48.00	81	48.00	91	125.00	177
12	60.00	64	60.00	115	60.00	129	150.00	215

Note—Prices and information on larger sizes on request.

TAYLOR FORGED THREADED



Faced and Drilled; Raised Face

Sizes, prices and weights same as for the Slip-On Flanges above.

All above, open stock.

Note

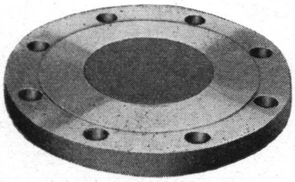
1/16 in. raised faces on all 150 and 300 lb. flanges; ¼ in. raised faces on all 400 and 600 lb. flanges.

Note

See next page for Drilling Templates.

FORGED STEEL FLANGES

TAYLOR FORGE BLIND



Faced and Drilled; Raised Face

Pipe size, in.	150 Pound		300 Pound		400 Pound		600 Pound	
	Each	Wt. each, lbs.	Each	Wt. each, lbs.	Each	Wt. each, lbs.	Each	Wt. each, lbs.
½	$11.50	2	$11.50	2	$.....	..	$ 11.50	2
¾	11.50	2	11.50	3	.....	..	11.50	3
1	11.50	2	11.50	4	.....	..	11.50	4
1¼	11.50	3	11.50	6	.....	..	11.50	6
1½	11.50	3	11.50	7	.....	..	11.50	8
2	12.60	4	12.60	8	.....	..	12.60	10
2½	14.70	7	14.70	12	.....	..	14.70	15
3	17.05	9	17.05	16	.....	..	17.05	20
4	23.70	17	23.70	27	23.70	33	40.00	41
6	31.60	26	31.60	50	31.60	61	66.00	86
8	42.00	45	42.00	81	42.00	100	96.00	139
10	58.00	70	58.00	127	58.00	155	150.00	231
12	76.00	110	76.00	184	76.00	226	180.00	295

Note—Prices and information on larger sizes on request.

ALLOY STEEL BOLT STUDS

For Flanges

Threaded entire length. With two nuts conforming to ASTM Specification A194-40.

Pipe size, in.	For 150 Pound Flanges				For 300 Pound Flanges			
	Each	No. of bolts	Diam. bolt, in.	Lgth., bolt, in.	Each	No. of bolts	Diam. bolt, in.	Lgth. bolt, in.
½	$0.40	4	½	2¼	$0.41	4	½	2½
¾	.40	4	½	2¼	.47	4	⅝	3
1	.41	4	½	2½	.47	4	⅝	3
1¼	.41	4	½	2½	.48	4	⅝	3¼
1½	.42	4	½	2¾	.61	4	¾	3½
2	.48	4	⅝	3¼	.49	8	⅝	3½
2½	.49	4	⅝	3½	.65	8	¾	4
3	.49	4	⅝	3½	.67	8	¾	4¼
4	.49	8	⅝	3½	.69	8	¾	4½
6	.65	8	¾	4	.71	12	¾	4¾
8	.67	8	¾	4¼	.92	12	⅞	5½
10	.86	12	⅞	4¾	1.36	16	1	6¼
12	.86	12	⅞	4¾	1.94	16	1⅛	6¾

Pipe size, in.	For 400 Pound Flanges				For 600 Pound Flanges			
	Each	No. of bolts	Diam. bolt, in.	Lgth., bolt, in.	Each	No. of bolts	Diam. bolt, in.	Lgth. bolt, in.
½					$0.43	4	½	3
¾		Use 600 lb. for sizes 3½ in. and smaller			.49	4	⅝	3½
1					.49	4	⅝	3½
1¼					.50	4	⅝	3¾
1½					.67	4	¾	4¼
2					.52	8	⅝	4¼
2½					.71	8	¾	4¾
3	$....	..	..	...	.73	8	¾	5
4	.92	8	⅞	5½	.94	8	⅞	5¾
6	.96	12	⅞	6	1.42	12	1	6¾
8	1.42	12	1	6¾	2.10	12	1⅛	7¾
10	2.06	16	1⅛	7½	2.85	16	1¼	8½
12	2.75	16	1¼	8	2.90	20	1¼	8¾

All above, open stock.

FLANGE DRILLING TEMPLATES

STANDARD CAST IRON FLANGED VALVES AND FITTINGS

American Standard

125 pounds steam working pressure.

Size, in.	Diam. of flanges, in.	Thickness of flanges, in.	Bolt circle, in.	No. of bolts	Size of bolts, in.	Length of bolts, in.
3	7½	¾	6	4	⅝	2½
4	9	15/16	7½	8	⅝	3
6	11	1	9½	8	¾	3¼
8	13½	1⅛	11¾	8	¾	3½
10	16	1 3/16	14¼	12	⅞	3¾
12	19	1¼	17	12	⅞	3¾
14 OD	21	1⅜	18¾	12	1	4¼
16 OD	23½	1 7/16	21¼	16	1	4½
18 OD	25	1 9/16	22¾	16	1⅛	4¾
20 OD	27½	1 11/16	25	20	1⅛	5
24 OD	32	1⅞	29½	20	1¼	5½

EXTRA HEAVY CAST IRON FLANGED VALVES AND FITTINGS

American Standard

250 pounds steam working pressure.

Size, in.	Diam. of flanges, in.	Thickness of flanges, in.	Bolt circle, in.	No. of bolts	Size of bolts, in.	Length of bolts, in.
3	8¼	1⅛	6⅝	8	¾	3½
4	10	1¼	7⅞	8	¾	3¾
6	12½	1 7/16	10⅝	12	¾	4
8	15	1⅝	13	12	⅞	4½
10	17½	1⅞	15¼	16	1	5¼
12	20½	2	17¾	16	1⅛	5½
14 OD	23	2⅛	20¼	20	1⅛	6
16 OD	25½	2¼	22½	20	1¼	6¼
18 OD	28	2⅜	24¾	24	1¼	6½
20 OD	30½	2½	27	24	1¼	6¾
24 OD	36	2¾	32	24	1½	7¾

These Drilling Templates are in multiples of four, so that fittings may be made to face in any quarter, and bolt holes straddle the center line.

SERIES 150 STEEL FLANGED VALVES AND FITTINGS

American Standard

Size, in.	OD of flange, in.	*Thickness of flange, in.	OD raised face, in.	Diam. bolt circle, in.	No. of bolts	Diam. bolts, in.	Length bolts, in.
3	7½	15/16	5	6	4	⅝	3½
3½	8½	15/16	5½	7	8	⅝	3½
4	9	15/16	6 3/16	7½	8	⅝	3½
5	10	15/16	7 5/16	8½	8	¾	3¾
6	11	1	8½	9½	8	¾	4
8	13½	1⅛	10⅝	11¾	8	¾	4¼
10	16	1 3/16	12¾	14¼	12	⅞	4¾
12	19	1¼	15	17	12	⅞	4¾
14 OD	21	1⅜	16¼	18¾	12	1	5¼
16 OD	23½	1 7/16	18½	21¼	16	1	5½
18 OD	25	1 9/16	21	22¾	16	1⅛	6
20 OD	27½	1 11/16	23	25	20	1⅛	6¼
24 OD	32	1⅞	27¼	29½	20	1¼	7

FLANGE DRILLING TEMPLATES

SERIES 300 STEEL FLANGED VALVES AND FITTINGS

American Standard

Size, in.	OD of flange, in.	*Thickness of flange, in.	OD raised face, in.	Diam. bolt circle, in.	No. of bolts	Diam. bolts, in.	Length bolts, in.
3	8¼	1⅛	5	6⅝	8	¾	4¼
4	10	1¼	6 3/16	7⅞	8	¾	4½
6	12½	1 7/16	8½	10⅝	12	¾	4¾
8	15	1⅝	10⅝	13	12	⅞	5½
10	17½	1⅞	12¾	15¼	16	1	6¼
12	20½	2	15	17¾	16	1⅛	6¾
14 OD	23	2⅛	16¼	20¼	20	1⅛	7
16 OD	25½	2¼	18½	22½	20	1¼	7½
18 OD	28	2⅜	21	24¾	24	1¼	7¾
20 OD	30½	2½	23	27	24	1¼	8¼
24 OD	36	2¾	27¼	32	24	1½	9¼

SERIES 400 STEEL FLANGED VALVES AND FITTINGS

American Standard

Size, in.	OD of flange, in.	Thickness of flange, in.	OD raised face, in.	Diam. bolt circle, in.	No. of bolts	Diam. bolts, in.	Length bolts, in.
4	10	1⅜	6 3/16	7⅞	8	⅞	5½
6	12½	1⅝	8½	10⅝	12	⅞	6
8	15	1⅞	10⅝	13	12	1	6¾
10	17½	2⅛	12¾	15¼	16	1⅛	7½
12	20½	2¼	15	17¾	16	1¼	8
14 OD	23	2⅜	16¼	20¼	20	1¼	8¼
16 OD	25½	2½	18½	22½	20	1⅜	8¾
18 OD	28	2⅝	21	24¾	24	1⅜	9
20 OD	30½	2¾	23	27	24	1½	9¾
24 OD	36	3	27¼	32	24	1¾	10¾

SERIES 600 STEEL FLANGED VALVES AND FITTINGS

American Standard

Size, in.	OD of flange, in.	Thickness of flange, in.	OD raised face, in.	Diam. bolt circle, in.	No. of bolts	Diam. bolts, in.	Length bolts, in.
3	8¼	1¼	5	6⅝	8	¾	5
4	10¾	1½	6 3/16	8½	8	⅞	5¾
6	14	1⅞	8½	11½	12	1	6¾
8	16½	2 3/16	10⅝	13¾	12	1⅛	7¾
10	20	2½	12¾	17	16	1¼	8½
12	22	2⅝	15	19¼	20	1¼	8¾
14 OD	23¾	2¾	16¼	20¾	20	1⅜	9¼
16 OD	27	3	18½	23¾	20	1½	10
18 OD	29¼	3¼	21	25¾	20	1⅝	10¾
20 OD	32	3½	23	28½	24	1⅝	11½
24 OD	37	4	27¼	33	24	1⅞	13

Diameter of bolt holes are ⅛ in. larger than nominal size of bolts.

*The regular 1/16 inch raised face of Series 150 and 300 flanges is included in the minimum flange thickness given above, but other raised faces must be added thereto.

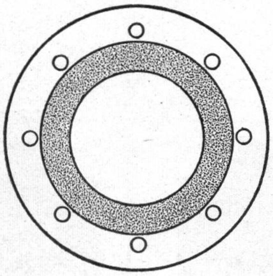
The regular ¼-inch raised face of Series 400 and 600 is not included in the minimum flange thickness given above. The addition of any facing is beyond the outside face of the flange.

Length of bolts given are for flanges with regular raised faces (¼ in. male on Series 400 and 600).

Length of bolts includes the thickness of two nuts but does not include the height of the crown of the bolt stud.

PIPE FLANGE GASKETS

RING STYLE



1/16 in. Thick

Ring gaskets cover the face of this flange to the inside edge of the bolts.

Furnished in two types.

Red Rubber—Cut from a red rubber sheet packing especially well adapted for high or low pressure service or saturated steam, hot or cold water, air, gases, etc.

Compressed Asbestos—Cut from an asbestos sheet packing, laminated with 5000 lbs. per sq. in. tensile strength both ways. Recommended for a multitude of services such as steam, water, oil, dry air, acids, ammonia, alkali, gases, etc.

Standard

For standard and low pressure flanged fittings and valves.

Size valve or fitting, in.	OD, in.	Red Rubber Each	Red Rubber Wt. per 100, lbs.	Asbestos Each	Asbestos Wt. per 100, lbs.
3	5⅜	$0.25	7¾	$0.35	6¼
4	6⅞	.39	12	.50	10
6	8¾	.59	15⅝	.70	12¾
8	11	.75	22	.95	18
10	13⅜	1.00	30½	1.40	25
12	16⅛	1.25	45⅝	1.75	37¼
14	17¾	1.50	45⅝	2.15	37¼
16	20¼	2.00	59½	3.00	48½
18	21⅝	2.30	55⅜	3.25	45⅛
20	23⅞	2.50	65	3.60	53½
24	28¼	2.90	85	4.80	61½

Note—Prices and information on larger sizes available on request.

Extra Heavy

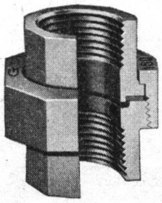
For medium and extra heavy flanged fittings and valves.

Size valve or fitting, in.	OD, in.	Red Rubber Each	Red Rubber Wt. per 100, lbs.	Asbestos Each	Asbestos Wt. per 100, lbs.
3	5⅞	$0.32	10	$0.41	8
4	7⅛	.50	13½	.57	11
6	9⅞	.75	23¾	.95	20
8	12⅛	.95	32	1.25	26⅛
10	14¼	1.25	39¾	1.75	32½
12	16⅝	1.60	51	2.15	42
14	19⅛	1.95	61	2.85	50
16	21¼	2.50	69½	3.65	58½
18	23½	2.85	83½	4.15	68
20	25¾	3.15	97	4.75	79
24	30½	3.65	133	6.00	108

Note—Prices and information on larger sizes available on request.

MALLEABLE IRON UNIONS

STANDARD 150 POUND



No. 470—Gasket Type

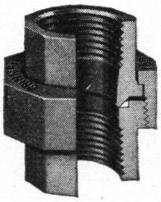
With lip and loose washer.

For 150 lbs. steam working pressures; for 300 lbs. cold water, oil or gas non-shock working pressures.

Octagon ends and nut.

Size, in.	Black, each	Galv., each	End to end, in.	Wt. 100 pcs., lbs.
¼	$0.85	$1.10	1⅜	23
⅜	.85	1.10	1 9/16	32
½	.90	1.20	1 13/16	44
¾	1.00	1.30	2 1/16	63
1	1.30	1.70	2 3/16	100
1¼	1.80	2.35	2½	143
1½	2.20	2.85	2⅝	180
2	2.75	3.55	2 15/16	292
2½	5.60	7.30	3 3/16	464
3	9.25	12.00	3⅜	655

STANDARD 150 POUND



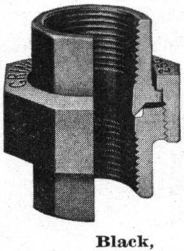
No. 463—Bronze-to-Iron Ground Joint

For 150 lbs. steam working pressures; for 300 lbs. cold water, oil or gas non-shock working pressures.

Octagon ends and nut.

Size, in.	Black, each	Galv., each	End to end, in.	Wt. 100 pcs., lbs.
¼	$1.10	$1.30	1⅜	24
⅜	1.10	1.30	1⅝	33
½	1.15	1.40	1⅞	45
¾	1.30	1.55	2⅛	61
1	1.70	2.05	2¼	85
1¼	2.35	2.85	2½	137
1½	2.85	3.45	2 11/16	182
2	3.60	4.30	3	276
2½	7.35	8.80	3⅛	414
3	12.00	14.50	3 5/16	550

HEAVY 250 POUND



No. 554—Bronze-to-Iron Ground Joint

For 250 lbs. steam working pressures; for 500 lbs. cold water, oil or gas non-shock working pressures.

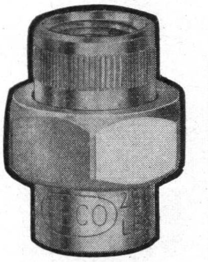
Octagon ends and nut.

Size, in.	Black, each	Galv., each	End to end, in.	Wt. 100 pcs., lbs.
¼	$1.10	$1.30	1⅝	25
⅜	1.10	1.30	1⅞	35
½	1.15	1.40	2	53
¾	1.30	1.55	2¼	80
1	1.70	2.05	2½	119
1¼	2.35	2.85	2 11/16	170
1½	2.85	3.45	2 15/16	221
2	3.60	4.30	3¼	379
2½	7.35	8.80	3⅞	646
3	12.00	14.50	4¼	968

All above, open stock.

STEEL UNIONS

HEAVY 250 POUND



Steel-to-Brass Seat

For 250 lbs. steam working pressures; for 500 lbs. cold water, oil or gas non-shock working pressures. Approved by Underwriters' Laboratories for lines carrying hazardous liquids.

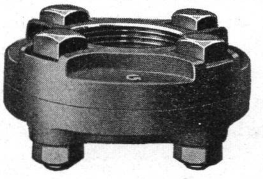
Cheaper and far superior to either the gasket type or ground joint in the 150 pound range malleable iron unions.

Nos.	Galv., each	Size, in.	End to end, in.	Wt. 100 pcs., lbs.
U4S	$0.70	¼	1⅝	19
U6S	.75	⅜	1⅝	27
U8S	.85	½	1⅞	44
U12S	1.00	¾	2 11/16	56

Twenty-five in a carton.

CAST IRON FLANGE UNIONS

STANDARD 125 POUND



No. 487—Faced, with Rubber Gasket

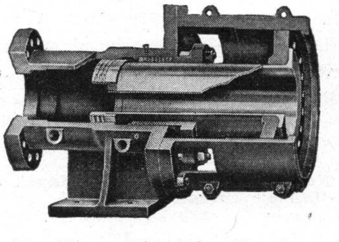
For 125 lbs. steam working pressure; for 175 lbs. cold water, oil or gas non-shock working pressure.

Size, in.	Each	Diam. of flanges, in.	No. of bolts	Wt. 100 pcs., lbs.
½	$1.10	2 15/16	3	130
¾	1.30	3	3	240
1	1.50	3¼	3	280
1¼	1.75	4 3/16	4	370
1½	2.10	4⅜	4	520
2	2.70	5	4	650
2½	3.40	5⅝	4	930
3	4.10	6⅜	4	1250
4	6.00	7 11/16	5	1900
6	8.50	10¼	6	3600
8	15.00	12 15/16	8	5800

Open stock.

EXPANSION JOINTS

ADSCO



For Every Pipe Line Service

Adsco Expansion Joints are the result of over 65 years experience in the design and manufacture of such equipment.

Made in wide range of sizes from ¾ in. up, with bronze, semi-steel or steel bodies, with or without base and service outlets for steam, hot water, gasoline, oil, gas, air, etc.

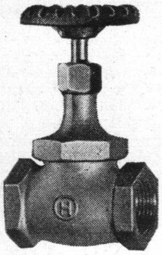
Available in the following types:

Riser joints for small pipe sizes.
Internally-Externally Guided Type.
Internally Guided Type.
Piston-Ring Type.
Duplex-Sleeve Type.
Tie-Rod Type.
Semi-Guided Type.
Packless Variator Types.

It is not practical to show detailed listings on all types. Refer your problem to us and special catalogs and data will be sent.

LUNKENHEIMER 125 LB. S. P. VALVES

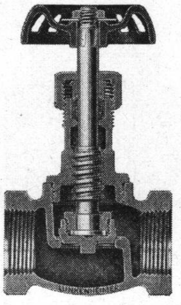
(125 LB. S.P.—200 LB. WOG)



No. 400—Globe
Screwed Ends

BRONZE

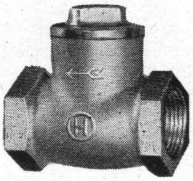
Renewable
Composition Disc



No. 2140—Globe
No. 2141—Angle
Screwed Ends

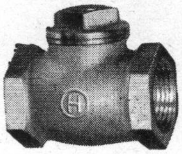
BRONZE

Renewable
Bronze Disc



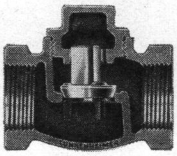
No. 900—Swing
Check
Screwed Ends

BRONZE



No. 901—Lift
Check
Screwed Ends

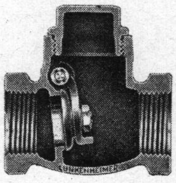
BRONZE



No. 2142—Lift
Check
Screwed Ends

BRONZE

Renewable
Bronze Disc



No. 2144—Swing
Check
Screwed Ends

BRONZE

Renewable Bronze
Disc and
Side Plugs

No. 400—Globe

Not a Lunkenheimer, but an excellent 125 lb. valve for the price of a 100 lb. valve. For low pressure steam, domestic gas, hot and cold water lines.

Solid one-piece bonnet construction. Non-heating handwheel.

Size, in.	Each	End to end, in.	Wt. each, lbs.
¼	$1.75	1 11/16	¾
⅜	1.75	1⅞	1
½	1.95	2 5/16	1
¾	2.30	2⅝	1¼
1	3.10	3	2
1¼	4.50	3 7/16	2¾
1½	6.10	3 15/16	3¾
2	9.00	4 7/16	5 9/16

No. 2140—Globe
No. 2141—Angle

Exceptionally good design and liberal proportions. Gland in stuffing box. Repackable under pressure when wide open. Ventilated, non-heating hand wheel. For general service on steam, water, oil or gas lines.

Size, in.	No. 2140 Globe, each	No. 2141 Angle, each	Globe end to end, in.	Angle ctr. to end, in.	Av. wt. each, lbs.
⅛	$ 2.10	$ 2.10	1 7/16	23/32	.325
¼	2.10	2.10	1⅞	15/16	.565
⅜	2.40	2.40	2	1	.65
½	3.40	3.40	2¼	1⅛	.95
¾	4.50	4.50	2¾	1⅜	1.59
1	6.20	6.20	3¼	1⅝	2.22
1¼	8.00	8.00	3¾	1⅞	3.34
1½	11.30	11.30	4¼	2⅛	4.87
2	17.50	17.50	5	2½	7.60
2½	25.50	25.50	6	3	12.75
3	38.00	38.00	7	3½	19.38

All above, open stock.

No. 900—Swing Check

Not a Lunkenheimer valve, but a 125 lb. swing check for the price of a 100 lb. swing check. For use on low pressure steam, water and oil lines.

Can be installed in either horizontal or vertical positions.

Size, in.	Each	End to end, in.	Wt. each, lbs.
⅜	$2.50	1⅞	7/16
½	2.80	2⅛	9/16
¾	3.20	2¼	⅞
1	4.25	3	1⅓
1¼	5.25	3 7/16	2
1½	6.40	3 13/16	2½
2	9.70	4 7/16	4

No. 901—Lift Check

Not a Lunkenheimer valve, but a 125 lb. check for the price of a 100 lb. check. For use on low pressure steam, water and oil lines.

Size, in.	Each	End to end, in.	Wt. each, lbs.
⅜	$1.65	1⅞	.3
½	2.10	2⅛	.6
¾	2.70	2¼	.7
1	3.65	3	1.3
1¼	5.80	3 7/16	1.8
1½	6.10	3 13/16	2.7
2	8.90	4 7/16	4.4

All above, open stock.

Note—The sizes of all valves are determined by the size pipe for which they are intended.

No. 2142—Lift Check

Recommended for general service on steam, water, oil or gas lines. A better than usual valve for its field of application.

Size, in.	Each	End to end, in.	Wt. each, lbs.
¼	$2.10	1⅞	.3417
⅜	2.30	2	.4188
½	3.20	2¼	.6438
¾	4.30	2¾	1.04
1	5.60	3¼	1.60
1¼	7.20	3¾	2.45
1½	9.30	4¼	3.50
2	13.80	5	5.83
2½	23.00	6	9.85
3	34.00	7	15.94

Note—For ⅛ in. size use No. 414, 200 lb. check valve.

No. 2144—Swing Check

Especially well made and liberally proportioned throughout. Recommended for protection against reverse flow in steam, water, oil and gas lines.

Can be used in vertical lines.

Size, in.	Each	End to end, in.	Wt. each, lbs.
⅜	$3.80	2⅛	.5125
½	4.30	2 5/16	.75
¾	4.90	2 13/16	1.10
1	6.50	3¼	1.8
1¼	8.00	3⅞	2.65
1½	9.70	4¼	3.7
2	14.70	5	6.25
2½	24.00	6¼	10.5
3	36.00	7⅛	15.9

Note—For ¼ in. size use No. 554, 200 lb. swing check valve.

All above, open stock.

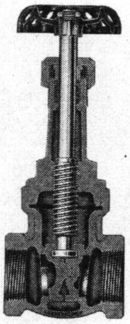
LUNKENHEIMER 125 LB. S. P. VALVES

(125 LB. S.P.—200 LB. WOG)

No. 602—Gate
Screwed Ends

BRONZE

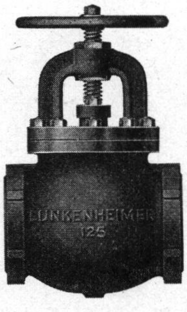
Non-Rising Stem, Single Wedge Disc



No. 2125—Gate
Screwed Ends

BRONZE

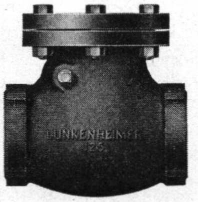
Double Wedge Gate, Taper Seat, Rising Bronze Stem



No. 1120—Globe
Screwed Ends

IRON BODY, BRONZE MOUNTED

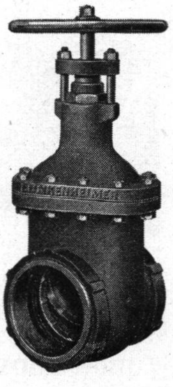
Renewable Bronze Seat and Disc



No. 1789—Swing Check
Screwed Ends

IRON BODY, BRONZE MOUNTED

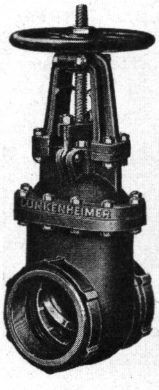
Renewable Bronze Seat and Disc Renewable Side Plugs



No. 1427—Gate
Screwed Ends

IRON BODY, BRONZE MOUNTED

Inside Screw Non-Rising Stem Renewable Bronze Seats and Discs



No. 1429—Gate
Screwed Ends

IRON BODY, BRONZE MOUNTED

Outside Screw and Yoke, Rising Stem Renewable Bronze Seats and Discs

No. 602—Gate

A 125 lb. gate for the price of a 100 lb. gate. Not a Lunkenheimer valve.

For low pressure steam, water, oil, air, vacuum or gas service where a full unobstructed flow is desirable.

Rolled brass stem with deep threads; internal type bonnet with broad hex. Jewel type packing rings. Can be repacked under pressure when wide open. Non-heating hand wheel.

Size, in.	Each	End to end, in.	Wt. each, lbs.
⅜	$2.40	1⅞	.6
½	2.85	2 1/16	.8
¾	3.35	2 3/16	1.1
1	4.00	2 7/16	1.7
1¼	5.35	2 13/16	2.4
1½	6.80	3⅛	3.4
2	9.75	3½	5.2

No. 2125—Gate

The most popular valve made.

Ball and socket bearing discs; beveled disc wing guides and body guide channels.

Large stuffing box repackable under pressure. Hexagon head gland. All parts renewable.

Size, in.	Each	End to end, in.	Wt. each, lbs.
¼	$4.30	1⅞	13/16
⅜	4.30	2	⅞
½	5.00	2 3/16	1¼
¾	5.90	2½	2
1	7.00	2 13/16	2⅞
1¼	9.40	3 3/16	3¾
1½	12.00	3½	5⅜
2	17.00	4 1/16	8½
2½	27.60	4 11/16	13 5/16
3	41.00	5¼	20

All above, open stock.

No. 1120—Globe

Iron body, yoke and gland; solid bronze disc, seat ring, stem and bushings.

Seating surfaces are regrindable. All parts, including seat and disc, are renewable. Stuffing boxes repackable under pressure with valve wide open.

Stem operates in bronze bushings in yoke, gland and bottom of stuffing box, thereby preventing corrosion and consequent scoring of stem.

Size, in.	Each	End to end, in.	Wt. each, lbs.
2	$36.00	6⅜	23
2½	38.00	7⅜	36
3	44.50	8⅜	49
3½	52.00	9	66
4	65.00	10	83
5	84.50	12	122
6	114.00	13⅞	174

No. 1789—Swing Check

Flanged cap.

Seating surface regrindable.

May be connected in either vertical or horizontal positions.

Size, in.	Each	End to end, in.	Wt. each, lbs.
2	$18.00	8	28½
2½	19.50	8½	43
3	24.00	9½	56
3½	32.50	10½	71
4	41.00	11½	90
5	53.50	13	135
6	67.50	14	182

All above, open stock.

Note—See next page for flanged valves.

No. 1427—Wedge Disc Gate

Iron body, bonnet, yoke and gland; solid bronze disc; bronze seat rings, stem and yoke, gland and bonnet bushings.

All parts renewable.

Size, in.	Each	End to end, in.	Wt. each, lbs.
2	$34.00	5¼	25
2½	35.50	5¾	34
3	39.50	6 5/16	45
3½	46.00	6⅝	58
4	54.50	7 1/16	74
5	76.00	8	110
6	93.00	8¾	155

No. 1429—Wedge Disc Gate

Iron body, bonnet, yoke and gland; solid bronze disc; bronze seat rings, stem and yoke, gland and bonnet bushings.

All parts renewable.

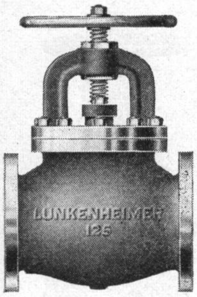
Size, in.	Each	End to end, in.	Wt. each, lbs.
2	$40.00	5¼	27
2½	43.00	5¾	37
3	51.50	6 5/16	48
3½	60.50	6⅝	63
4	71.00	7 1/16	80
5	93.50	8	124
6	117.00	8¾	162

All above, open stock.

Note—See next page for flanged valves.

LUNKENHEIMER 125 LB. S. P. VALVES

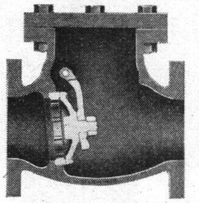
(125 LB. S.P.—200 LB. WOG)



No. 1123—Globe Flanged Ends

IRON BODY BRONZE MOUNTED

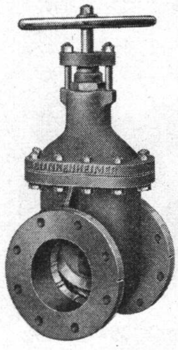
Renewable Bronze Seat and Disc



No. 1790—Check Flanged Ends

IRON BODY BRONZE MOUNTED

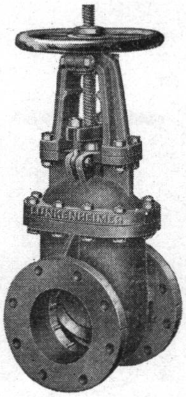
Renewable Bronze Seat and Disc Renewable Side Plugs



No. 1428—Gate Flanged Ends

IRON BODY BRONZE MOUNTED

Inside Screw Non-Rising Stem Renewable Bronze Seats and Discs



No. 1430—Gate Flanged Ends

IRON BODY BRONZE MOUNTED

Outside Screw and Yoke, Rising Stem Renewable Bronze Seats and Discs

No. 1123—Globe

Iron body, yoke and gland. Drain bosses cast on body of sizes 6 in. and larger. Bronze seat ring, stem and bushings. Bronze disc to 6 in.; bronze faced iron disc, 8 in. and larger.

Seating surfaces regrindable. All parts including seat and disc are renewable. Stuffing boxes repackable under pressure when wide open.

Flanges faced and drilled.

Size, in.	Each	Face to face, in.	Wt. each, lbs.
2	$40.00	8	31
2½	43.00	8½	46
3	51.00	9½	61
3½	62.50	10½	81
4	76.50	11½	100
5	96.00	13	140
6	126.00	14	193
8	210.00	19½	360
10	335.00	24¼	578
12	650.00	27½	890
14	1200.00	32	1300

No. 1790—Swing Check

Iron body and flanged cap.

Seating surfaces regrindable.

May be connected in either vertical or horizontal positions.

Flanges faced and drilled.

Size, in.	Each	Face to face, in.	Wt. each, lbs.
2	$21.00	8	31
2½	24.00	8½	44
3	30.00	9½	57
3½	39.50	10½	76
4	48.50	11½	97
5	62.00	13	130
6	76.50	14	172
8	162.00	19½	330
10	260.00	24½	500
12	357.00	27½	730

Note—See preceding page for screwed end valves.

All above, open stock.

No. 1428—Wedge Disc Gate

Iron body, bonnet, yoke and gland; solid bronze disc; bronze seat rings, stem and yoke, gland and bonnet bushings.

All parts renewable.

Flanges faced and drilled.

Size, in.	Each	Face to face, in.	Wt. each, lbs.
2	$37.50	7	31
2½	40.00	7½	44
3	44.50	8	54
3½	52.50	8½	72
4	62.50	9	96
5	84.50	10	130
6	102.00	10½	183
8	175.00	11½	277
10	276.00	13	437
12	395.00	14	644

No. 1430—Wedge Disc Gate

Iron body, bonnet, yoke and gland; solid bronze disc; bronze seat rings, stem and yoke, gland and bonnet bushings.

All parts renewable.

Flanges faced and drilled.

Size, in.	Each	Face to face, in.	Wt. each, lbs.
2	$43.50	7	33
2½	47.50	7½	46
3	56.50	8	57
3½	67.00	8½	76
4	79.00	9	100
5	102.00	10	146
6	126.00	10½	191
8	210.00	11½	316
10	330.00	13	679
12	468.00	14	679

All above, open stock.

Note—See preceding page for screwed end valves.

NOTE

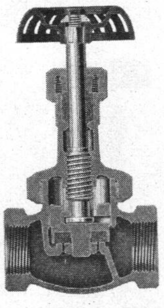
All standard pattern flanged valves have flanges of the same diameters as standard specifications on page 106 and are drilled to that template.

All extra heavy pattern flanged valves have flanges of the same diameters as extra heavy specifications and are drilled to that template.

Prices of all flanged valves include drilling; no deduction if valves are ordered "not drilled."

LUNKENHEIMER 150 LB. S. P. VALVES

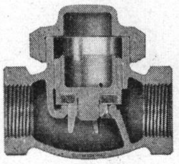
(150 LB. S.P.—300 LB. WOG)



No. 123—Globe
No. 214—Angle Screwed Ends

BRONZE

"N-M-D" Non-Metallic Disc Inside Screw Screwed Bonnet



No. 231—Lift Check Screwed Ends

BRONZE

"N-M-D" Non-Metallic Disc Screwed Cap

No. 123—Globe

No. 214—Angle

Regularly furnished with No. 20 disc.

Non-heat; easy grip malleable iron wheel. Screw-over bonnet; ample guiding contact; well proportioned body with full flow areas. Repackable under pressure.

The non-metallic disc is made to Lunkenheimer specifications for maximum service life, can be easily and quickly renewed. Slip-on type disc holder.

Size, in.	No. 123 Globe, each	No. 214 Angle, each	Globe end to end, in.	Angle cent. to end, in.	Av. wt. each, lbs.
⅛	$ 3.30	$ 3.30	2	15/16	¾
¼	3.30	3.30	2 3/16	1 1/32	1
⅜	4.10	4.10	2½	1 3/16	1¼
½	5.20	5.20	2 13/16	1 5/16	1⅝
¾	7.20	7.20	3 5/16	1 9/16	2¾
1	9.80	9.80	4	1 15/16	4⅛
1¼	13.40	13.40	4½	2 3/16	5¾
1½	16.70	16.70	5 1/16	2 7/16	8
2	27.00	27.00	6⅛	2 15/16	13
2½	49.00	49.00	7¼	3 7/16	22
3	69.00	69.00	8⅜	4	34

No. 231—Lift Check

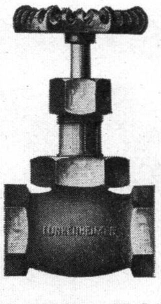
Regularly furnished with No. 20 disc.

Size, in.	Each	End to end, in.	Wt. each, lbs.
⅛	$ 3.00	2	½
¼	3.00	2 3/16	9/16
⅜	3.40	2½	¾
½	4.10	2 13/16	1⅛
¾	5.70	3 5/16	1¾
1	8.00	4	2¾
1¼	11.50	4½	4⅛
1½	14.70	5 1/16	6
2	22.00	6⅛	10⅝

All above, open stock.

Note—For Non-Metallic Discs, see page 118.

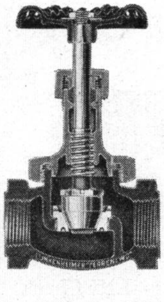
LUNKENHEIMER 150 LB. S. P. VALVES



No. 1021—Globe
Screwed Ends

"FERRENEWO"
IRON BODY
BRONZE
MOUNTED

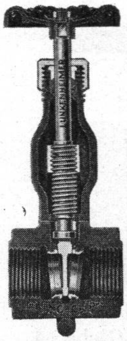
Renewable
Nickel Alloy
Seat and Disc



No. 1021-P—Globe
Screwed Ends

"FERRENEWO"
PLUG TYPE
IRON BODY
BRONZE
MOUNTED

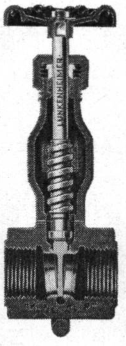
"NS5" Nickel
Alloy Renewable
Seat and Disc



No. 1640—Gate
Screwed Ends

"KING-CLIP"
IRON BODY
BRONZE
MOUNTED

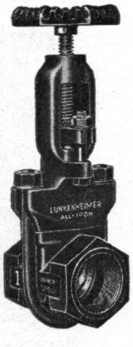
Rising Stem
Inside Screw
Bolted Bonnet



No. 1644—Gate
Screwed Ends

"KING-CLIP"
ALL-IRON

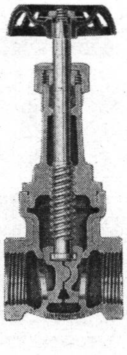
Rising Steel
Stem, Inside
Screw
Bolted Bonnet



No. 1683—Gate
Screwed Ends

"KING-CLIP"
ALL-IRON

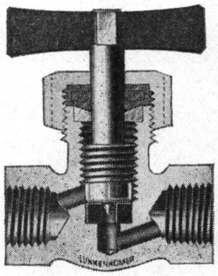
Rising Stem
Outside Screw
and Yoke
Bolted Bonnet



No. 2150—Gate
Screwed Ends

BRONZE
DOUBLE
WEDGE

Taper Seat
Rising Stem
Inside Screw



No. 1204—Rock Drill
Water Valves
Screwed Ends

BRONZE

Renewable
Fibre Seat

No. 1021—Globe

225 lbs. WOG.

Seating surfaces regrindable. All parts renewable.

Stuffing box is repackable under pressure with valve wide open. The disc swivels on stem of valves.

2 in. and smaller are of the union bonnet, inside screw type; 2½, 3 and 4 in. are of outside screw and yoke construction.

Bonnet ring on valves 1½ in. and smaller is hexagon shape; 2 in. size has round slotted ring.

Size, in.	Each	End to end, in.	Wt. each, lbs.
¼	$ 7.50	2 9/16	1⅛
⅜	7.70	2 11/16	1⅓
½	8.00	3	1⅞
¾	9.60	3 9/16	3
1	11.60	4⅛	4⅞
1¼	14.30	4¾	6¼
1½	18.00	5¼	8⅝
2	23.80	6¼	14
2½	44.00	7⅜	36
3	55.00	8⅜	50
4	95.00	10	84

No. 1021-P—Plug Type Globe

225 lbs. WOG.

Same as No. 1021 above but with "NS5" nickel alloy seat and disc. This seating material is of uniformly great hardness and retains its hardness at high temperature. It is resistive to wear, galling, abrasion, erosion and corrosion.

Size, in.	Each	End to end, in.	Wt. each, lbs.
¼	$ 8.00	2 9/16	1¼
⅜	8.30	2 11/16	1⅜
½	8.80	3	2
¾	10.20	3 9/16	3
1	12.50	4⅛	4⅜
1¼	16.40	4¾	6⅜
1½	22.00	5¼	8⅝
2	29.00	6¼	14

All above, open stock.

No. 1640—Gate

¼ to 2 in. for 150 lbs. S.P., 225 lbs. WOG.

2½ to 4 in. for 125 lbs. S.P., 175 lbs. WOG.

Iron body and bonnet, steel clip; bronze bonnet bushing, disc, seat rings and stem; bronze screwed stuffing box nut in sizes up to 3 in. inclusive; bronze gland follower 1 to 3 in. inclusive; bolted iron gland 3½ to 4 in. valves.

Size, in.	Each	End to end, in.	Wt. each, lbs.
¼	$ 7.00	1⅞	1½
⅜	7.00	2 1/16	1½
½	7.40	2¼	2
¾	7.90	2⅝	2⅞
1	9.10	2 15/16	4⅕
1¼	10.60	3 5/16	5½
1½	12.20	3 7/16	7⅗
2	15.80	4 1/16	11¾
2½	25.00	4⅝	18⅔
3	35.00	4 15/16	29¾
3½	71.50	6 13/16	45⅗
4	71.50	6 13/16	61⅜

No. 1644—Gate

¼ to 2 in. for 150 lbs. S.P., 225 lbs. WOG.

2½ to 4 in. 125 lbs. S.P., 175 lbs. WOG.

All parts made of ferrous metals. For use in handling solutions which attack bronze but not iron.

Size, in.	Each	End to end, in.	Wt. each, lbs.
¼	$ 6.70	1⅞	1½
⅜	6.70	2 1/16	1 9/16
½	7.00	2¼	2
¾	7.30	2⅝	2⅞
1	7.60	2 15/16	4⅓
1¼	8.40	3 5/16	5⅔
1½	9.40	3 7/16	7¾
2	12.20	4 1/16	11⅞
2½	18.20	4⅝	18⅞
3	25.00	4 15/16	30⅓
3½	56.00	6 13/16	46⅓
4	56.00	6 13/16	62⅓

No. 1683—Gate

¼ to 2 in. for 150 lbs. S.P., 225 lbs. WOG.

2½ to 4 in. for 125 lbs. S.P., 175 lbs. WOG.

All parts made of ferrous metals.

For use in handling solutions which attack bronze but not iron.

Size, in.	Each	End to end, in.	Wt. each, lbs.
½	$11.60	2¼	2⅗
¾	12.00	2⅝	3⅔
1	12.50	2 15/16	5⅓
1¼	13.40	3 5/16	6⅔
1½	15.50	3 7/16	9
2	18.80	4 1/16	13⅛
2½	25.00	4⅝	21⅓
3	32.00	4 15/16	33
4	64.00	6 13/16	66½

No. 2150—Gate

300 lbs. WOG.

Embody all the essentials to provide unfailing and long-lasting service without frequent time-consuming attention and repairs. Rising stem serves as open or closed indicator.

Ventilated non-heating hand wheel.

Size, in.	Each	End to end, in.	Wt. each, lbs.
¼	$ 4.70	1⅞	⅞
⅜	4.70	1 31/32	15/16
½	5.50	2 3/16	1⅜
¾	6.50	2¼	2⅛
1	7.70	2 13/16	3 3/16
1¼	10.30	3 3/16	4 7/16
1½	13.20	3½	6 5/16
2	18.70	4 1/32	10 7/16
2½	33.00	4 11/16	16½
3	49.00	5¼	23⅜

Rock Drill Water Valves

For 250 lbs. WOG working pressure. Designed for use on water lines to rock drills of the type known as "water-liners" in which water flows through a hollow bit to saturate the pulverized drillings.

Bronze body; renewable fibre seat. Valve should be installed with pressure above the seat, the correct position being indicated by an arrow cast on the body.

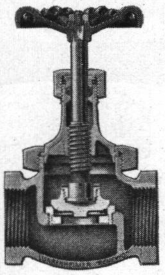
Resists the action of sulphuric acid and other chemicals encountered in mining and drilling work.

	Each
No. 1204—⅜ in., 2¼ in. from end to end; wt. each .81 lbs.	$3.40

All above, open stock.

LUNKENHEIMER 200 LB. S.P. VALVES

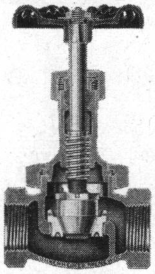
(200 LB. S.P. 500° F.—400 LB. WOG)



No. 73—Globe
Screwed Ends

BRONZE
"RENEWO"
REGULAR TYPE

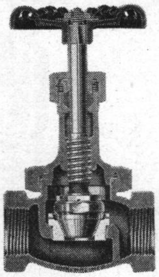
Renewable
Nickel Alloy
Seat and Disc



No. 73-P—Globe
Screwed Ends

BRONZE
"RENEWO"
PLUG (P) TYPE

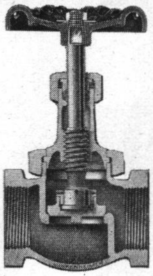
Renewable
Nickel Alloy
Seat and Disc
330 Brinell



No. 73-PS—Globe
Screwed Ends

BRONZE
"RENEWO"
PLUG (PS) TYPE

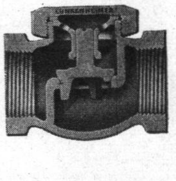
Renewable
Stainless Steel
Seat and Disc
500 Brinell



No. 407—Globe
Screwed Ends

BRONZE
REGRINDING

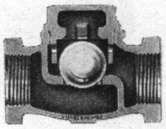
Renewable
Bronze
Disc



No. 414—Lift Check
Screwed Ends

BRONZE
REGRINDING

Renewable
Bronze
Disc



No. 416—Ball Check
Screwed Ends

BRONZE

Screwed
Cap

No. 73—Globe

Seating surfaces regrindable and renewable.

Stuffing box repackable under pressure with valve wide open. Disc swivels on stem in all sizes. 2 in. size has slotted bonnet ring. All parts interchangeable.

Size, in.	Each	End to end, in.	Wt. each, lbs.
¼	$ 5.70	2⅛	¾
⅜	6.20	$2\frac{5}{16}$	⅞
½	7.30	2⅝	1⅛
¾	9.50	3¼	2⅛
1	12.00	3¾	3½
1¼	16.00	4¼	5
1½	21.00	4¾	6¾
2	35.00	5¾	11
2½	61.00	$6\frac{13}{16}$	20
3	88.00	7¾	27

No. 73-P—Plug (P) Type Globe

Seating surfaces resistant to wear, galling, abrasion, erosion and corrosions. The greater area of the full plug width seating surface retards wire drawing and promotes longer service life.

Plug type seats and discs are interchangeable in corresponding sizes with those in No. 73 valves.

Repackable under pressure when wide open.

Size, in.	Each	End to end, in.	Wt. each, lbs.
¼	$ 6.00	2⅛	¾
⅜	7.40	$2\frac{5}{16}$	1
½	8.50	2⅝	1⅜
¾	10.60	3¼	2⅜
1	13.80	3¾	3½
1¼	19.70	4¼	5
1½	27.00	4¾	6¾
2	39.00	5¾	11
2½	70.00	$6\frac{13}{16}$	20
3	104.00	7¾	27

All above, open stock.

No. 73-PS—Plug (PS) Type Globe

Inside screw, rising stem, union bonnet.

For severe throttling service where 500 Brinell stainless steel plug type seats and discs are preferred. Interchangeable with Regular type and (P) type nickel alloy "Renewo" valve seats and discs.

Repackable under pressure when wide open.

Size, in.	Each	End to end, in.	Wt. each, lbs.
¼	$ 7.60	2⅛	¾
⅜	8.20	$2\frac{5}{16}$	1
½	9.80	2⅝	1⅜
¾	12.50	3¼	2⅜
1	16.00	3¾	3½
1¼	21.00	4¼	5
1½	28.00	4¾	6¾
2	42.00	5¾	11
2½	72.00	$6\frac{13}{16}$	20
3	110.00	7¾	27

No. 407—Regrinding Globe

After long service, should the seating surfaces show signs of wear, they may be reground after taking valve out of pipe line.

All parts renewable. Repackable under pressure when wide open. Integral stem and disc in ½ in. and smaller. In larger sizes, disc retained by locknut, swivels on stem.

Size, in.	Each	End to end, in.	Wt. each, lbs.
⅛	$ 2.70	1⅝	¾
¼	2.70	$2\frac{1}{16}$	¾
⅜	3.40	2⅛	⅞
½	4.40	$2\frac{7}{16}$	1¼
¾	5.70	$2\frac{15}{16}$	2⅜
1	8.30	3⅜	3
1¼	11.20	3⅞	4½
1½	14.80	$4\frac{5}{16}$	6
2	22.50	5¼	9⅝
2½	37.00	$6\frac{7}{16}$	17½
3	55.00	$7\frac{9}{16}$	24½

All above, open stock.

No. 414—Lift Check

Regrindable seating surfaces; disc and all other parts renewable. Sizes 2½ in. and larger have a round slotted cap instead of hexagonal cap.

Size, in.	Each	End to end, in.	Wt. each, lbs.
⅛	$ 2.40	1⅝	¼
¼	2.50	$2\frac{1}{16}$	⅓
⅜	3.10	2⅛	⅜
½	4.00	$2\frac{7}{16}$	¾
¾	5.40	$2\frac{15}{16}$	1¼
1	7.70	3⅜	1¾
1¼	10.00	3⅞	2⅞
1½	13.40	$4\frac{5}{16}$	4
2	20.50	5¼	6⅞
2½	35.00	$6\frac{7}{16}$	11½
3	51.00	$7\frac{3}{16}$	16¾

No. 416—Ball Check

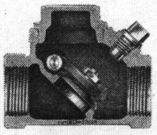
The true spherical shape of the ball and the construction of the guide assure proper seating with minimum wear on the seating surfaces.

Size, in.	Each	End to end, in.	Wt. each, lbs.
⅛	$ 3.00	$1\frac{9}{16}$	$\frac{3}{16}$
¼	3.50	1⅝	⅓
⅜	4.00	2¼	$\frac{7}{16}$
½	4.50	2⅝	$\frac{11}{16}$
¾	6.20	$3\frac{3}{16}$	$1\frac{5}{16}$
1	8.60	3¾	2
1¼	13.00	$4\frac{5}{16}$	3¼
1½	19.00	$4\frac{13}{16}$	$4\frac{9}{16}$
2	33.00	$5\frac{15}{16}$	8½

All above, open stock.

LUNKENHEIMER 200 LB. S. P. VALVES

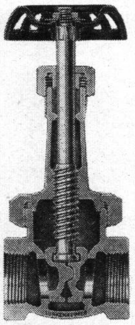
(200 Lb. S.P. 500° F.—400 Lb. WOG)



No. 554—Swing Check
Screwed Ends

BRONZE
REGRINDING

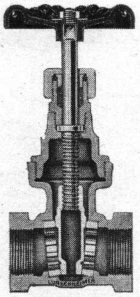
Renewable
Bronze Disc
and
Side Plugs



No. 2228—Gate
Screwed Ends

BRONZE

Nickel Alloy
Double Wedge
Disc, Taper
Seat, Rising
Stem



No. 768—Gate
Screwed Ends

BRONZE

Nickel Alloy
Single Wedge
Disc, Taper
Seat,
Non-Rising
Stem, Inside
Screw

No. 554—Swing Check

Seating surfaces regrindable; all parts renewable; screw cap. Two removable bronze side plugs serve as bearings for the disc carrier pin. Will function properly in either vertical or horizontal positions.

This valve has a 45° seat.

Size, in.	Each	End to end, in.	Wt. each, lbs.	Size, in.	Each	End to end, in.	Wt. each, lbs.
¼	$4.90	2 5/16	9/16	1¼	$10.00	3 15/16	2⅞
⅜	4.90	2 7/16	⅝	1½	12.70	4⅜	4 1/16
½	5.20	2 9/16	¾	2	18.40	5⅜	6¾
¾	6.30	3	1¼	2½	28.50	6 3/16	10½
1	8.00	3 9/16	2	3	46.00	7 1/16	15¼

No. 2228—Gate

¼ to 2 in. sizes have union bonnet. 2½ and 3 in. sizes have bolted bonnet.

All parts are heavy and rugged and of finest materials. Circular body design is effective insurance against distortion of the valve body and seats due to pipe line stresses and internal pressure strains.

Rising stem serves as open or closed indicator.

Size, in.	Each	End to end, in.	Wt. each, lbs.	Size, in.	Each	End to end, in.	Wt. each, lbs.
¼	$ 6.10	2 5/32	1⅛	1¼	$15.50	3⅜	5 5/16
⅜	6.10	2¼	1 3/16	1½	19.40	3 11/16	7 7/16
½	7.30	2½	1¾	2	30.00	4 9/16	12 9/16
¾	8.70	2¾	2¾	2½	57.00	5⅜	25
1	12.10	3 1/16	3¾	3	77.00	6	35⅛

No. 768—Gate

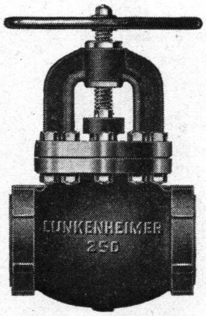
Double seated single disc, guided by ribs in body. All parts renewable including nickel alloy discs and seat rings in 1 in. and larger. Gland follower in 1 in. and larger. Stuffing box repackable under pressure.

Size, in.	Each	End to end, in.	Wt. each, lbs.	Size, in.	Each	End to end, in.	Wt. each, lbs.
¼	$ 6.10	2 1/16	1	1¼	$15.50	3⅝	5¼
⅜	6.10	2 3/16	1 1/16	1½	19.40	3 15/16	7⅛
½	7.30	2 7/16	1⅜	2	30.00	4 9/16	11⅞
¾	8.70	2¾	2⅜	2½	57.00	5¼	19⅝
1	12.10	3 5/16	3¾	3	77.00	5⅝	27½

All above, open stock.

LUNKENHEIMER 250 LB. S. P. VALVES

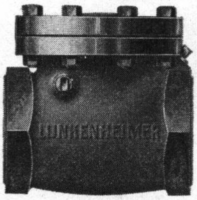
(250 Lb. S.P. 450° F.—500 Lb. WOG)



No. 881—Globe
Screwed Ends

IRON BODY
BRONZE
MOUNTED

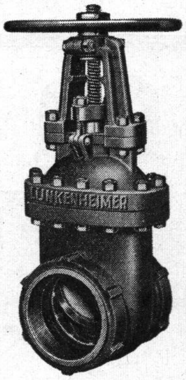
Renewable
Bronze Seat
and Disc



No. 324—Swing Check
Screwed Ends

IRON BODY
BRONZE
MOUNTED

Renewable
Bronze Seat,
Disc, and
Side Plugs



No. 1435—Gate
Screwed Ends

IRON BODY
BRONZE
MOUNTED

Rising Bronze
Stem Renewable
Bronze Seats
and Discs

No. 881—Globe

Iron body, yoke and gland, bronze disc, seat ring, stem and bushings.

Seating surfaces regrindable; all parts renewable, repackable under pressure when wide open.

Stem operates in bronze bushings.

Size, in.	Each	End to end, in.	Wt. each, lbs.	Size, in.	Each	End to end, in.	Wt. each, lbs.
2	$63.50	8 3/16	50	3	$89.00	11¾	99
2½	78.00	10⅝	74	4	123.00	13	164

No. 324—Swing Check

Iron body and cap; bronze seat, disc, disc carrier and regrinding and carrier pin plugs.

Seating surfaces are regrindable. All parts, including seat and disc are renewable.

May be connected in either horizontal or vertical position; 45° seat angle. The two side bearing plugs can be renewed.

Size, in.	Each	End to end, in.	Wt. each, lbs.	Size, in.	Each	End to end, in.	Wt. each, lbs.
2	$48.50	7	31	3	$76.50	8⅞	59
2½	61.50	7⅞	44	4	100.00	10⅝	95

No. 1435—Gate

Iron body, bonnet, yoke and gland; solid bronze disc. Bronze seat rings, stem, and yoke, gland and bonnet bushings.

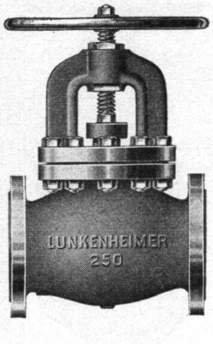
Size, in.	Each	End to end, in.	Wt. each, lbs.	Size, in.	Each	End to end, in.	Wt. each, lbs.
1½	$65.00	5½	31	3	$106.00	7¼	83
2	70.00	6	46	4	142.00	8 9/16	142
2½	87.00	6⅝	65				

All above, open stock.

Note—See next page for flanged 250 lb. S.P. valves.

LUNKENHEIMER 250 LB. S. P. VALVES

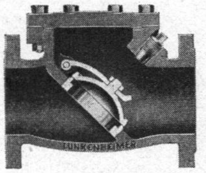
(250 Lb. S.P. 450° F.—500 Lb. WOG)



No. 884—Globe Flanged Ends

IRON BODY BRONZE MOUNTED

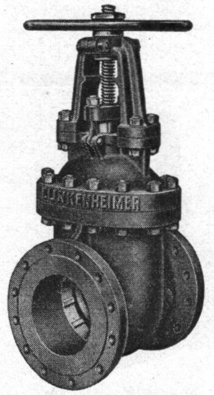
Renewable Bronze Seat and Disc



No. 323—Swing Check Flanged Ends

IRON BODY BRONZE MOUNTED

Renewable Bronze Seat, Disc and Side Plugs



No. 1436—Gate Flanged Ends

IRON BODY BRONZE MOUNTED

Rising Bronze Stem Renewable Bronze Seats and Discs

No. 884—Globe

Drain bosses cast on bodies of sizes 4 in. and larger. Bronze disc in sizes to 6 in. incl.; 8 in. size has bronze faced iron disc. Otherwise same as No. 881.

Flanges have $\frac{1}{16}$ in. raised faces and are regularly furnished drilled.

Size, in.	Each	Face to face, in.	Wt. each, lbs.	Size, in.	Each	Face to face, in.	Wt. each, lbs.
2	$68.00	10½	58	4	$139.00	14	191
2½	86.00	11½	84	5	182.00	15¾	271
3	102.00	12½	114	6	230.00	17½	362
3½	117.00	13¼	144	8	376.00	21	665

No. 323—Swing Check

Iron body and cap; bronze seat, disc, disc carrier, and regrinding and carrier pin plugs.

Seating surfaces regrindable. All parts renewable. May be connected in either horizontal or vertical position; 45° seat angle.

Flanges faced and drilled.

Size, in.	Each	Face to face, in.	Wt. each, lbs.	Size, in.	Each	Face to face, in.	Wt. each, lbs.
2	$53.50	10½	43	5	$145.00	15¾	189
2½	69.00	11½	60	6	192.00	17½	258
3	86.00	12½	84	8	334.00	21	532
4	112.00	14	131				

No. 1436—Gate

Iron body, bonnet, yoke and gland; solid bronze disc in sizes 6 in. and smaller, bronze faced iron disc in larger sizes. Bronze seat rings, stem and yoke, gland and bonnet bushings.

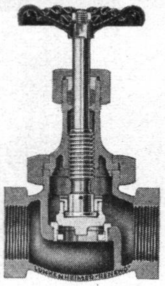
Size, in.	Each	Face to face, in.	Wt. each, lbs.	Size, in.	Each	Face to face, in.	Wt. each, lbs.
1½	$70.00	7½	41	6	$260.00	15⅞	362
2	75.00	8½	56	8	470.00	16½	558
2½	93.00	9½	79	10	630.00	18	830
3	114.00	11⅛	103	12	900.00	19¾	1169
3½	136.00	11⅞	132	14	1200.00	22½	1508
4	157.00	12	176	16	1500.00	24	2010
5	208.00	15	256	18	2300.00	26	2570

All above, open stock.

Note—See preceding page for screwed 250 lb. S.P. valves.

LUNKENHEIMER 300 LB. S. P. VALVES

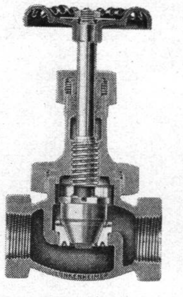
(300 Lb. S.P. 550° F.—600 Lb. WOG)



No. 16—Globe Screwed Ends

BRONZE "RENEWO" REGULAR TYPE

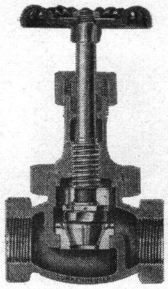
Renewable Nickel Alloy Seat and Disc



No. 16-P—Globe Screwed Ends

BRONZE "RENEWO" PLUG (P) TYPE

Renewable Nickel Alloy Seat and Disc 330 Brinell



No. 16-PS—Globe Screwed Ends

BRONZE "RENEWO" PLUG (PS) TYPE

Renewable Stainless Steel Seat and Disc 500 Brinell

No. 16—Globe

Seating surfaces regrindable.

Stuffing box repackable under pressure with valve wide open. Disc swivels on stem in all sizes of valves.

2 in. have slotted bonnet rings. In sizes ¼ to 2 in. inclusive, union bonnet types, all parts are interchangeable excepting the bonnet ring.

Size, in.	Each	End to end, in.	Wt. each, lbs.	Size, in.	Each	End to end, in.	Wt. each, lbs.
¼	$ 6.60	2$\frac{5}{16}$	1⅛	1¼	$20.00	4¾	7
⅜	7.00	2½	1¼	1½	26.00	5¼	9⅝
½	8.50	2⅞	1¾	2	44.00	6⅜	17
¾	12.00	3$\frac{9}{16}$	3¼	2½	70.00	7⅜	30
1	15.00	4⅛	4⅞	3	110.00	8⅜	42

No. 16-P—Plug (P) Type Globe

Nickel alloy seat and disc resist wear, galling, abrasion, erosion and corrosion.

The plug type seat and disc are interchangeable in corresponding sizes with those in regular No. 16 valves.

All other parts interchangeable with No. 16. Repackable under pressure when wide open.

Size, in.	Each	End to end, in.	Wt. each, lbs.	Size, in.	Each	End to end, in.	Wt. each, lbs.
¼	$ 7.20	2$\frac{5}{16}$	1⅛	1¼	$24.00	4¾	7
⅜	7.80	2½	1¼	1½	31.40	5¼	9⅝
½	9.60	2⅞	1¾	2	48.00	6⅜	17
¾	13.30	3$\frac{9}{16}$	3¼	2½	73.00	7⅜	30
1	18.40	4⅛	4⅞	3	112.50	8⅜	42

No. 16-PS—Plug (PS) Type Globe

Inside screw, rising stem, union bonnet.

For severe throttling service where this type of seat and disc are preferred. Interchangeable with regular type and nickel alloy "Renewo" valve seats and discs.

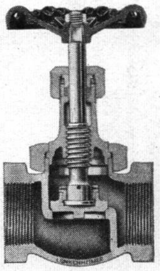
Repackable under pressure when wide open.

Size, in.	Each	End to end, in.	Wt. each, lbs.	Size, in.	Each	End to end, in.	Wt. each, lbs.
¼	$ 8.20	2$\frac{5}{16}$	1⅛	1¼	$26.00	4¾	7
⅜	9.00	2½	1¼	1½	32.50	5¼	9⅝
½	11.00	2⅞	1¾	2	51.00	6⅜	17
¾	15.00	3$\frac{9}{16}$	3¼	2½	78.00	7⅜	30
1	20.00	4⅛	4⅞	3	120.00	8⅜	42

All above, open stock.

LUNKENHEIMER 300 LB. S. P. VALVES

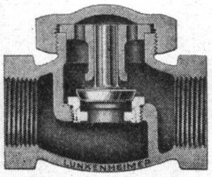
(300 LB. S.P., 550° F.—600 LB. WOG)



No. 409—Globe Screwed Ends

BRONZE REGRINDING

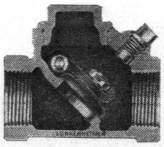
Renewable Bronze Disc



No. 845—Lift Check Screwed Ends

BRONZE "RENEWO"

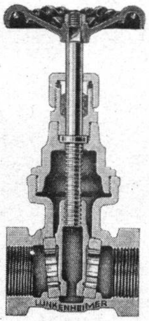
Renewable Nickel Alloy Seat and Disc



No. 624—Swing Check Screwed Ends

BRONZE REGRINDING

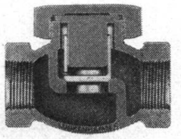
Renewable Bronze Disc and Side Plugs



No. 771—Gate Screwed Ends

BRONZE SINGLE WEDGE DISC

Renewable Nickel Alloy Seat and Disc, Taper Seat, Inside Screw, Non-Rising Stem



No. 1616—Air Compressor Check Screwed Ends

BRONZE

Hollow Stainless Steel Disc

No. 409—Globe

May be reground without taking the valve out of the pipe line. This feature with the renewability of all parts, including the bronze disc makes the valve practically indestructible. Stuffing box is repackable under pressure with valve wide open.

Stem and disc in ½ in. and smaller sizes are integral. In larger sizes the discs are retained by locknut and swivels on stem. Non-heat malleable iron handwheel.

Size, in.	Each	End to end, in.	Wt. each, lbs.
¼	$ 4.80	2¼	1⅛
⅜	5.60	2 7/16	1¼
½	7.00	2¾	1⅝
¾	8.80	3⅜	2⅞
1	11.80	3¾	4¼
1¼	14.80	4 5/16	6¼
1½	20.00	4⅞	8⅜
2	31.00	5⅞	16
2½	55.00	7 1/16	27½
3	80.00	7⅞	37

No. 845—Lift Check

Screw cap.

Size, in.	Each	End to end, in.	Wt. each, lbs.
¼	$ 9.30	2 5/16	⅔
⅜	10.60	2½	¾
½	11.00	2⅞	1 3/16
¾	14.00	3 9/16	2 3/16
1	16.00	4⅛	3½
1¼	20.00	4¾	5 3/16
1½	26.00	5¼	7 5/16
2	37.00	6⅜	12 5/16
2½	62.00	7⅜	19 3/16
3	100.00	8⅜	28 9/16

No. 624—Swing Check

Seating surfaces regrindable; all parts renewable. Screw cap.

Two removable bronze side plugs serve as bearings for the disc carrier pin. Will function properly in either vertical or horizontal positions.

This valve has a 45° seat.

Size, in.	Each	End to end, in.	Wt. each, lbs.
¼	$ 6.00	2⅜	¾
⅜	6.30	2½	¾
½	7.10	2 13/16	1 1/16
¾	9.00	3¼	1¾
1	10.40	3 13/16	2¾
1¼	14.00	4¼	4
1½	18.00	4 13/16	5½
2	26.50	5 11/16	9
2½	50.00	6 9/16	14
3	89.00	7½	19

No. 771—Gate

Renewable nickel alloy seats and discs, 1 in. size and larger. Single disc is double seated and is accurately guided by ribs cast in body. Disc cannot drop on seats.

Stuffing box repackable under pressure when wide open.

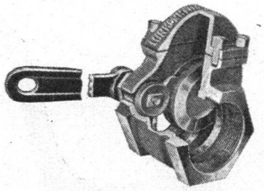
Size, in.	Each	End to end, in.	Wt. each, lbs.
¼	$ 9.70	2 5/16	1⅓
⅜	9.70	2 7/16	1 7/16
½	11.30	2¾	2⅛
¾	13.60	3 1/16	3⅜
1	17.00	3 13/16	5⅝
1¼	28.00	4 3/16	8
1½	36.00	4 9/16	11
2	50.00	5⅛	18 7/16
2½	77.00	5 13/16	28 7/16
3	108.00	6¼	37½

No. 1616—300 lb. Air-Compressor Check

Size, in.	Each	End to end, in.	Wt. each, lbs.	Size, in.	Each	End to end, in.	Wt. each, lbs.
¼	$ 6.20	2 1/16	.39	1	$11.50	3⅜	2.0
⅜	6.60	2⅛	.50	1¼	15.00	3⅞	3.25
½	7.00	2 7/16	.68	1½	19.00	4 5/16	5.0
¾	9.00	2 15/16	1.5	2	28.00	5¼	8.0

All above, open stock.

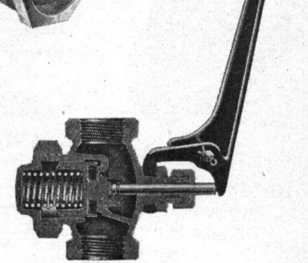
LUNKENHEIMER QUICK OPERATING VALVES



No. 430—Gate Screwed Ends

BRONZE "HANDY"

75 lb. S.P. or WOG



No. 1836—Globe Screwed Ends

BRONZE

150 lb. S.P. or WOG Non-Metallic Disc, Stainless Steel Spring

No. 430—"Handy" Quick Operating Gate

Recommended for installation where quick operation is desired in handling water, oils and low pressure steam.

The flexible ball and socket joint between the discs insures perfect seating with ease of operation.

Size, in.	Each	End to end, in.	Wt. each, lbs.
½	$ 7.50	2	1
¾	8.50	2 1/16	1⅕
1	10.50	2⅜	1⅞
1¼	13.00	2 9/16	2¾
1½	16.00	2⅞	3¾
2	21.50	3 1/16	5¾
2½	38.00	3⅝	8⅞
3	55.00	3⅞	13⅓
4	180.00	5 15/16	40⅜

No. 1836—Quick Operating Globe

With stainless steel spring and malleable iron pull lever.

See disc listing for service recommendations, page 118.

Furnished with No. 30 disc unless otherwise specified.

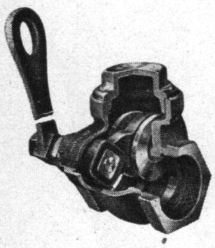
Size, in.	Each	End to end, in.	Wt. each, lbs.
¼	$ 7.70	2 3/16	15/16
⅜	9.00	2½	1
½	11.00	2 13/16	1¾
¾	14.00	3 5/16	2⅝
1	18.00	4	4
1¼	24.00	4½	5¾
1½	30.00	5 1/16	7⅞
2	47.00	6⅛	13½

All above, open stock.

Note

Orders should specify service—steam, hot water, cold water, gas, air, gasoline, oil, butane, propane.

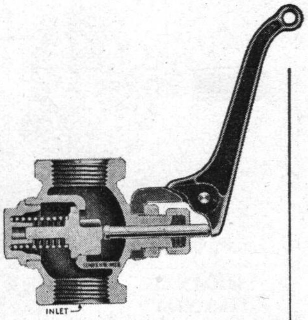
LUNKENHEIMER QUICK OPERATING VALVES



No. 431—Gate
Screwed
Ends

BRONZE
LEVER

175 lb. S.P.
or WOG



No. 635—Globe
Screwed Ends

BRONZE
REGRINDING

200 lb. S.P. or WOG
Stainless Steel
Spring
With Stuffing Box

No. 431—Lever Gate

Ball and socket bearing between the discs provides flexibility in seating arrangement.

Size, in.	Each	End to end, in.	Wt. each, lbs.
½	$11.00	2 5/16	1⅓
¾	13.00	2 9/16	2⅘
1	16.00	2 15/16	4
1¼	20.00	3¼	5⅙
1½	25.00	3 9/16	7
2	37.00	4 1/16	10¾
2½	66.00	5 3/16	20⅛

No. 635—Regrinding Globe

Provided with stuffing box.

Should be installed with pressure on spring side of the disc.

Intended for hand operation as well as by cord or chain. Lever is reversible and adjustable.

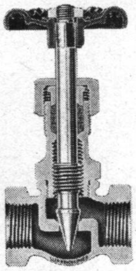
Size, in.	Each	End to end, in.	Wt. each, lbs.
¼	$ 6.60	2⅛	⅔
⅜	7.00	2 3/16	¾
½	8.00	2½	1⅛
¾	10.50	3	1⅞
1	15.00	3 7/16	2⅞
1¼	19.00	4	3⅞
1½	26.00	4⅜	6
2	38.00	5 5/16	10

All above, open stock.

Note

Orders should specify service—steam, hot water, cold water, gas, air, gasoline, oil, butane, propane.

LUNKENHEIMER NEEDLE VALVES

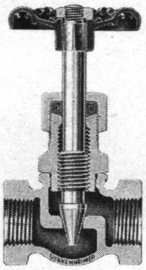


No. 1205—Globe

Screwed
Ends

BRONZE

200 lb. S.P.
400 lb. WOG
Bronze Stem
with Gland



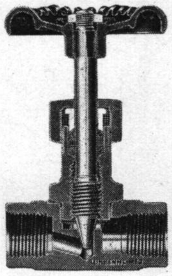
No. 906SS—Globe

No. 907SS—Angle

Screwed Ends

BRONZE

200 lb. S.P.
400 lb. WOG
Steel Stem



No. 1728—Globe
No. 1729—Angle

Screwed Ends

BAR STOCK
STEEL

3000 lb. WOG

13% CR Stainless
Steel Stem
⅛ to ½ in. Size;
with Gland

No. 1205—Globe

¼, ⅜, ½ and ¾ in. sizes approved by Underwriters' Laboratories for control of hazardous liquids. The Underwriters' Laboratories prescribe 50 lbs. per sq. in. as the maximum pressure for hazardous liquid equipment.

1 in. size has union bonnet.

Size, in.	Each	Diam. slot opening, in.	End to end, in.	Wt. each, lbs.
¼	$2.50	3/16	1⅝	½
⅜	2.70	¼	1 13/16	⅝
½	3.20	5/16	2⅛	1
¾	5.00	7/16	2 9/16	1½
1	9.00	9/16	3⅜	2 15/16

No. 906SS—Globe

The Lunkenheimer standard for the included angle of the tapered seating face at end of stem is 30 degrees.

Small seat openings provide fine regulation.

Size, in.	Each	Diam. seat opening, in.	End to end, in.	Wt. each, lbs.
⅛	$2.60	3/64	1 9/16	⅖
¼	3.00	1/16	1⅝	½
⅜	3.60	3/32	1 13/16	⅗
½	4.40	⅛	2⅛	⅞

No. 907SS—Angle

Size, in.	Each	Diam. seat opening, in.	Cent. to end, in.	Wt. each, lbs.
⅛	$2.70	3/64	¾	⅖
¼	3.10	1/16	13/16	½
⅜	3.80	3/32	15/16	⅗
½	4.80	⅛	1 1/16	⅞

Steel Globe and Angle

Carbon steel body, hub and stuffing box.

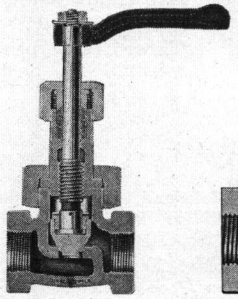
Suitable for controlling natural and artificial gas, oil free from sulphur compounds, and for other fluids which do not attack carbon steel.

		No. 1728—Globe			No. 1729—Angle		
Size, in.	Diam. seat opening, in.	Each	End to end, in.	Wt. each, lbs.	Each	Cent. to end, in.	Wt. each, lbs.
⅛	⅛	$ 4.00	1⅞	⅔	$4.00	15/16	⅔
¼	⅛	4.00	2	⅔	4.00	1	⅔
⅜	3/16	4.75	2¼	¾	4.75	1⅛	¾
½	¼	6.25	2⅜	⅞	6.25	1¼	⅞
¾	⅜	17.25	3½	4½	....	...	..
1	½	24.00	3¾	5½	....	...	..

All above, open stock.

LUNKENHEIMER 2000 LB. WOG WORKING PRESSURE VALVES

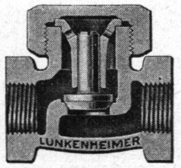
(4000 Lb. WOG Non-Shock Pressure)



No. 720—Globe
Screwed Ends

BRONZE
"HIGH DUTY"
REGRINDING

Renewable Bronze Disc
Lever Type Handle



No. 815—Lift Check
Screwed Ends

BRONZE

Renewable
Bronze
Disc

No. 720—Globe

For all hydraulic, air, gas or oil services.

Seating surfaces regrindable; all parts renewable.

Repackable under pressure when wide open.

Size, in.	Each	End to end, in.	Wt. each, lbs.
¼	$12.50	2½	2
⅜	13.00	2⅝	2⅛
½	15.00	3	3⅛
¾	19.00	3⅜	$4\frac{9}{16}$
1	24.00	4	7⅝
1¼	33.00	$4\frac{9}{16}$	13
1½	48.00	$5\frac{1}{16}$	18⅜
2	90.00	$5\frac{13}{16}$	30

No. 815—Lift Check

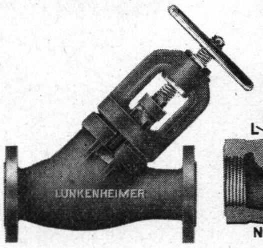
For all hydraulic, oil, gas or oil services.

Seating surfaces regrindable; all parts renewable.

Size, in.	Each	End to end, in.	Wt. each, lbs.
¼	$11.50	2½	1
⅜	12.00	2⅝	1⅛
½	13.00	3	$1\frac{13}{16}$
¾	16.00	3⅜	$2\frac{13}{16}$
1	21.00	4	$5\frac{7}{16}$
1¼	31.00	$4\frac{9}{16}$	8½
1½	44.00	$5\frac{1}{16}$	12
2	80.00	$5\frac{13}{16}$	20

All above, open stock.

LUNKENHEIMER BLOW-OFF VALVES



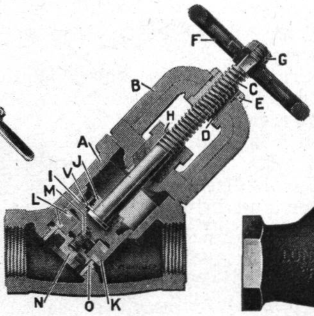
No. 305—125 lb. SP or 200 lb. WOG

No. 1352—250 lb. SP or 500 lb. WOG

Flanged Ends

IRON BODY STRAIGHTWAY OR Y BLOW-OFF

Outside Screw Flanged Yoke Bonnet



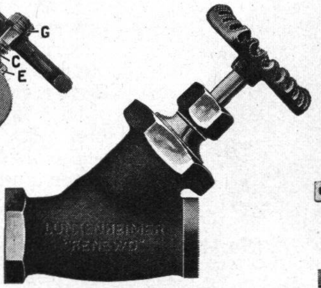
No. 935—125 lb. SP or 200 lb. WOG

No. 1351—250 lb. SP or 500 lb. WOG

Screwed Ends

IRON BODY STRAIGHTWAY OR Y BLOW-OFF

Flanged Yoke Bonnet



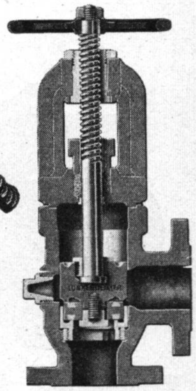
No. 180—200 lb. SP or 400 lb. WOG

No. 183—300 lb. SP or 400 lb. WOG

Screwed Ends

BRONZE STRAIGHTWAY OR Y BLOW-OFF

Union Bonnet



No. 896—Screwed Ends

No. 897—Flanged Ends

250 lb. SP

"DURO" IRON BODY ANGLE, BLOW-OFF

Bronze Seat, Alloy Faced Disc

All Lunkenheimer Blow-Off Valves Conform to ASME Construction Code

Iron Body, Flanged Ends

Iron body, yoke, gland and disc guide; iron disc with alloy faces; seat, disc locknut, stem and bushings in yoke, gland and stuffing box are of bronze.

Disc is reversible and disc face alloy can be melted out and replaced when worn. All parts including seat and disc renewable.

Flanges faced and drilled.

No. 305—125 lb. SP

Size, in.	Each	Face to face, in.	Wt. each, lbs.
1½	$58.00	9	35
2	66.00	10⅜	44
2½	75.00	11⅝	64

No. 1352—250 lb. SP

Size, in.	Each	Face to face, in.	Wt. each, lbs.
1½	$65.00	11½	50
2	78.00	12⅞	78
2½	95.00	14¾	113

Iron Body Screwed Ends

Otherwise same as flanged valves above.

No. 935—125 lb. SP

Size, in.	Each	End to end, in.	Wt. each, lbs.
1½	$52.00	6½	25
2	58.00	$7\frac{15}{16}$	37
2½	65.00	9⅛	53

No. 1351—250 lb. SP

Size, in.	Each	End to end, in.	Wt. each, lbs.
1½	$55.00	7⅜	39
2	67.00	9⅛	65
2½	82.00	10⅜	92

All above, open stock.

Bronze, Screwed Ends

Seating surfaces regrindable; all parts including nickel alloy seat and disc are renewable. Repackable under pressure when wide open.

No. 180—200 lb. SP

Size, in.	Each	End to end, in.	Wt. each, lbs.
¾	$19.00	$3\frac{13}{16}$	$2\frac{11}{16}$
1	21.00	4½	4
1¼	27.00	$5\frac{3}{16}$	5⅞
1½	32.00	$5\frac{13}{16}$	$7\frac{11}{16}$
2	50.00	7	$13\frac{5}{16}$
2½	104.00	$8\frac{3}{16}$	$22\frac{1}{16}$

No. 183—300 lb. SP

Size, in.	Each	End to end, in.	Wt. each, lbs.
¾	$33.00	$3\frac{15}{16}$	$3\frac{7}{16}$
1	38.00	4⅝	$5\frac{3}{16}$
1¼	47.00	5⅜	7⅔
1½	56.00	6	10⅝
2	85.00	$7\frac{3}{16}$	20⅓
2½	170.00	$8\frac{7}{16}$	33¼

"Duro" Iron Body Angle

Outside screw flanged yoke bonnet. All parts renewable.

Bronze stem operates in bronze bushings in top and bottom of yoke, and in stuffing box gland, preventing corrosion and insuring ease of operation.

No. 896—Screwed Ends

Size, in.	Each	Center to end, in.	Wt. each, lbs.
1½	$54.00	2⅞	36
2	66.00	4⅛	65
2½	80.00	4¾	91

No. 897—Flanged Ends

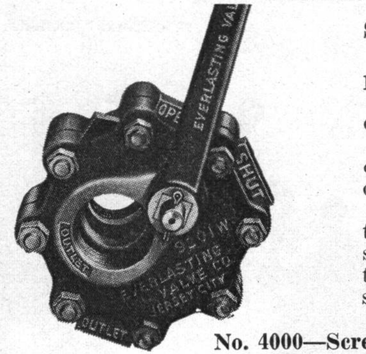
Flanges faced and drilled.

Size, in.	Each	Center to face, in.	Wt. each lbs.
1½	$63.00	4¼	45
2	76.00	4⅝	73
2½	92.00	5¼	104

All above, open stock.

EVERLASTING BLOW-OFF VALVES

MODEL "W"



Straight Lever, Quick Opening

For 250 lbs. steam working pressures.

Meet ASME Boiler Code requirements.

Straight-through blow. Disc cannot become loose and accidently check flow.

Disc is held in constant contact with the seat, preventing scale or dirt from getting between and injuring the sealing surfaces. Self-grinding.

No. 4000—Screwed Ends

Size, in.	Each	End to end, in.	Wt. each, lbs.	Size, in.	Each	End to end, in.	Wt. each, lbs.
⅜	$12.00	2½	4	1½	$25.00	4¼	20
½	12.00	2½	4	2	28.00	4⅜	25
¾	15.50	3	7	2½	36.00	5⅛	46
1	16.00	3½	12	3	63.00	6⅜	67
1¼	18.00	3⅜	15	4	76.00	6⅞	100

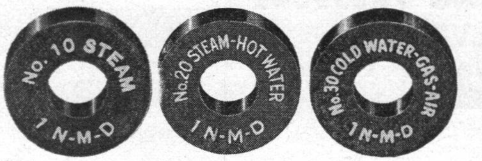
No. 4001—Flanged Ends

Size, in.	Each	Face to face, in.	Wt. each, lbs.	Size, in.	Each	Face to face, in.	Wt. each, lbs.
1	$31.00	7¼	20	2½	$46.00	10¼	71
1¼	33.00	7¼	24	3	75.00	11⅞	100
1½	34.00	8⅛	34	4	105.00	12	168
2	37.00	8⅞	43				

Open stock.

LUNKENHEIMER VALVE DISCS

"N-M-D" NON-METALLIC



Made to Lunkenheimer specifications for maximum wear and tightness in its particular service. Three basic types are available; steam; hot water; cold water, gas and air.

Service Recommendations:

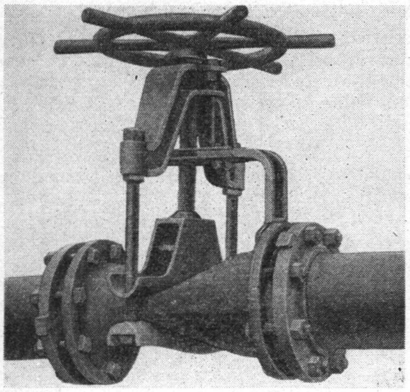
	Globe and angle valves	Check and quick operating valves
Steam 150 lbs. (saturated) Free from scale	No. 10	No. 20
Steam 150 lbs. (saturated) Scale present	No. 20	No. 20
Hot 250 lb.—250° F.	No. 20	No. 20
Water 300 lb.—150° F.	No. 20	No. 20
Cold water, air and gas, to 300 lbs.	No. 30	No. 30

Size valve, in.	No. 10, each	Nos. 20 & 30, each	Wt. pkg. of 12, lbs.	Size valve, in.	No. 10, each	Nos. 20 & 30, each	Wt. pkg. of 12, lbs.
⅛	$0.35	$0.12	.05	1¼	$1.00	$0.36	.44
¼	.35	.12	.05	1½	1.20	.48	.63
⅜	.50	.16	.08	2	1.80	.72	1.
½	.50	.16	.1	2½	2.50	.96	1.8
¾	.60	.20	.19	3	3.70	1.60	2.94
1	.75	.24	.3				

Twelve in a standard package; ⅛ to 1¼ in., six packages; 1½ to 2 in., three packages in a standard carton.

RUBBER PINCH VALVES

MASSCO-GRIGSBY



The Long Life Valve

Massco-Grigsby Pinch Valves are rapidly being adopted as standard equipment in ore milling plants, cement plants, sand and gravel operations, chemical or process industries and industrial plants where, in the transportation of abrasive and corrosive pulps or liquids, the severe action is injurious to metal type valves.

These valves incorportate the simplest yet most practical construction—just one wearing part, the long life easily replaceable rubber sleeve. A positive, leakproof, closure is obtained even when both solid particles and liquids are present. These valves also have wide application where control of fine dry material is required.

Specifications

Pressure—Designed to withstand pressures up to 100-150 psi.

Temperature—From below freezing up to 180 degrees Fahrenheit.

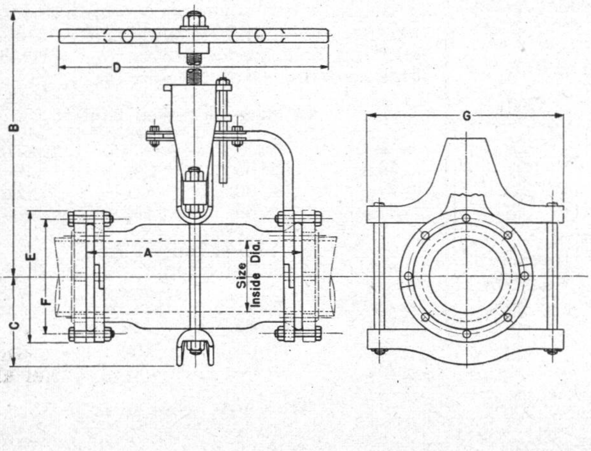
Area—Full area provided through entire valve. Straight unobstructed flow passage eliminates high friction loss.

Closing Mechanism—Steel bracket bolted to flange carries upper and lower clamps and handwheel. By turning wheel clamps move towards valve center equalizing pressure on both sides of sleeve. Chain and sprocket reduction unit provided on 8, 10 and 12 in. sizes. There are no packing glands.

Flanges—Cast steel split flanges provided to match standard companion pipe flanges.

Sleeve—One inch sleeve furnished of moulded Neoprene rubber. Other sizes furnished of hand moulded natural rubber reinforced with fabric. Neoprene rubber can be furnished at slightly higher cost.

Patented "Hinge"—All sleeves have recesses moulded into opposite sides of the interior preventing undue strains and eliminating breakage or excessive wear from valve adjustments. Sleeve ends fit between flanges forming perfect seal.



Inside diam., in.	1	2	3	4	6	8	10	12
Dimensions, in.								
A, face to face (± ½ in.)	*8	18½	12	12	18	24	30	36
B, center of body to top of stem	6¼	12¾	16½	17¼	23	22 7/16	26¾	30
C, center of body to bot. of valve	2⅛	3⅜	4⅞	5¾	7¾	11⅛	13¼	16
D, diameter of hand wheel	3 13/16	8	12	12	22½	22½	22½	22½
E, OD of flanges	4¼	6	7½	9	11	13½	16†	19†
F, diameter bolt circle	3⅛	4¾	6	7½	9½	11¾	14¼	17
Size bolts	½	⅝	⅝	⅝	¾	¾	⅞	⅞
No. of bolts	4	4	4	8	8	8	12	12
G, width over all	4 5/16	7¾	10	14	16½	25⅞	32½	39¼
Wt. each, lbs.	9	40	65	110	200	400	625	750
Each	$27.00	70.00	112.00	174.00	246.00	440.00	742.00	990.00

One in a box.

*±⅛ in.

†Also furnished with 250 lb. flanges.

STEEL VALVES

LUNKENHEIMER STEELS AND TRIM MATERIALS

150-300-400-600-900-1500 lb. S.P. Valves

Body-Bonnet Casting Materials For Steel Valves

Letter Suffix Reference	
"WB"	Carbon Steel conforming to the latest revision of A.S.T.M. Specification A216, Grade WCB.
"WD"	Carbon Molybdenum Steel conforming to the latest revision of A.S.T.M. Specification A217, Grade WC 1.
"WH"	Nickel-Chromium-Molybdenum Steel conforming to the latest revision of A.S.T.M. Specification A217, Grade WC 4.
"WL"	Nickel-Chromium-Molybdenum Steel conforming to the latest revision of A.S.T.M. Specification A217, Grade WC 5.
"J"	4%-6% Chromium ½% Molybdenum Steel conforming to the latest revision of A.S.T.M. Specification A157, Grade C5-A.

Trim Materials For Steel Valves

Numerical Suffix Reference	Valve Trim Symbols* (Name plate marking in order given) Stem	Disc	Seat	Description
"1"	B	B	B	Bronze stem, disc faces and seat rings. Suitable for steam, water, gas and air services for temperatures up to 450° F.
"2"	CR 13	CR 13	CR 13	Type 410—13% chromium stainless steel stem, disc faces and seat rings. Recommended for oil and oil vapor services.
"3"	CR 13	CR 13	CR 13	Type 410—13% chromium stainless steel stem; Type 420—13% chromium stainless steel disc and seat ring. Used exclusively for 600 lb. Globe, Angle, and Lift Check Valves, 2 in. and smaller. Recommended for steam, water, gas and air services for temperatures up to approximately 800° F.
"4"	18-8 Mo	18-8 Mo	18-8 Mo	Type 316—18% chromium 8% nickel with molybdenum stainless steel stem, disc faces and seat rings. Available for special services.
"5"	**8–20**	8–20	8–20	Type 325—8% chromium 20% nickel stainless steel stem, disc faces and seat rings. Available for special services.
"6"	CR 13	CR 13	NI CU	Type 410—13% chromium stainless steel stem and disc faces and high tin content nickel alloy seat rings. Recommended for steam, water, gas, and air services for temperatures up to approximately 800° F.
"7"	CR 13	H F	H F	Type 410—13% chromium stainless steel stem, stellite faced disc and stellite faced welded-in seat rings. Recommended for services exceeding approximately 800° F. or for lower temperatures involving unusually severe service.
"8"	NI CU	NI CU	NI CU	Monel stem, disc and seat rings. Available for special services.

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*These symbols are prescribed by MSS Standard Practice SP-25 entitled "Standard Marking System for Valves, Fittings, Flanges and Unions" and adopted by the American Standards Association and the American Petroleum Institute.

FIGURE NUMBER EXPLANATION

The complete Figure Number of any Steel Valve consists of:

(a) A Basic Number designating the type of valve; gate, globe, etc., and the type of pipe ends: Flanged, Butt Welding, Screwed, and Socket Welding.

(b) Letter Suffixes, immediately following the basic number, indicating the kind of body-bonnet material.

(c) A Numerical Suffix, immediately following the letter suffix, indicating the kind of trim.

Flanged Ends:
Example:

1938	WD	6
300 lb. S.P. Cast Steel Gate Valve, O.S.&Y., Flanged Ends.	Cast Carbon Molybdenum Steel. **Complete Figure Number 1938 WD6**	13% chromium stainless steel stem and disc faces and high tin content nickel alloy seat rings.

Butt Welding Ends: Designated by the Suffix "X" following the Flanged End Number.
Example:

1938X	WD	6
300 lb. S.P. Cast Steel Gate Valve, O.S.&Y., Butt Welding Ends.	Cast Carbon Molybdenum Steel. **Complete Figure Number 1938X-WD6**	13% chromium stainless steel stem and disc faces and high tin content nickel alloy seat rings.

Screwed Ends:
Example:

1869	WD	6
300 lb. S.P. Cast Steel Gate Valve, O.S.&Y., Screwed Ends.	Cast Carbon Molybdenum Steel. **Complete Figure Number 1869 WD6**	13% chromium stainless steel stem and disc faces and high tin content nickel alloy seat rings.

Socket Welding Ends: Designated by the Suffix "Y" following the Screwed End Number.
Example:

1869Y	WD	6
300 lb. S.P. Cast Steel Gate Valve, O.S.&Y., Socket Welding Ends.	Cast Carbon Molybdenum Steel. **Complete Figure Number 1869Y-WD6**	13% chromium stainless steel stem and disc faces and high tin content nickel alloy seat rings.

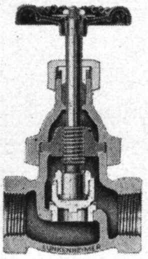
STEEL VALVES

LUNKENHEIMER SMALL GLOBE, ANGLE AND CHECK

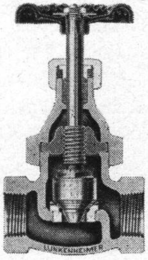
150 lbs.
300 lbs. } Steam Pressures, 750° F.
600 lbs.

300 lbs.
600 lbs. } WOG Pressures, 100° F.
1000 lbs.

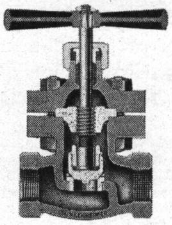
Same valves used for all three pressures.



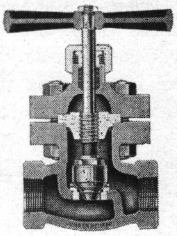
Full-Way Type
No. 1720-WB3—Globe
No. 1721-WB3—Angle
Steam and Oil
¼ to 2 inches—
Screwed Bonnet-
Thread Bushing



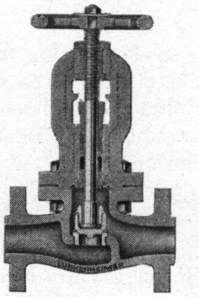
Throttling Type
No. 1722-WB3—Globe
No. 1723-WB3—Angle
Steam and Oil
½ to 2 inches—
Screwed Bonnet-
Thread Bushing



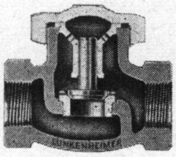
Full-Way Type
No. 1861-WB3—Globe
No. 1863-WB3—Angle
Steam and Oil
½ to 2 inches—
Screwed Bonnet-
Thread Bushing



Throttling Type
No. 1865-WB3—Globe
No. 1867-WB3—Angle
Steam and Oil
½ to 2 inches—
Screwed Bonnet-
Thread Bushing

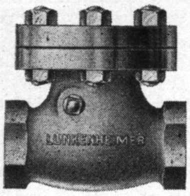


Full-Way Type
No. 1779-WB3—Globe
No. 1780-WB3—Angle
Steam and Oil
½ to 2 inches—
Flanged Outside
Screw and Yoke



Lift Check
No. 1783-WB3—
Horiz.
No. 1784-WB3—Angle
Steam and Oil
¼ to 2 inches—
Screwed

Note—Globe and Angle valves available with Screwed or Flanged ends, throttling or full-way seat and disc.



No. 1598-WD2—Screwed

Swing Check

Steam and Oil

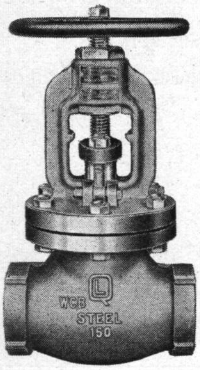
1¼ and 1½ in.; Bolted cap.

No. 1495-WD2—Flanged

No. 2 trim used in Swing Check Valves for both steam and oil.

150 POUND S.P. LUNKENHEIMER LARGE GLOBE, ANGLE, GATE AND CHECK

Types WB2 and WB6—Carbon Steel, 150 lbs. Steam and Oil Pressures, 500° F.; 230 lbs. Water, Oil and Gas Pressures, 100° F.



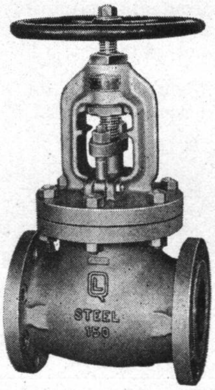
No. 1756-WB2—Globe

No. 1758-WB2—Angle

Steam and Oil

2 to 6 inches.

Screwed



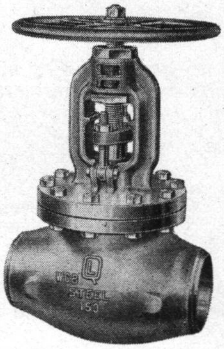
No. 1755-WB2—
Globe

No. 1757-WB2—
Angle

Steam and Oil

2 to 6 inches

Flanged



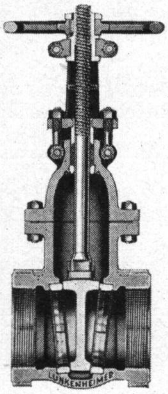
No. 1755X-WB2—
Globe

No. 1757X-WB2—
Angle

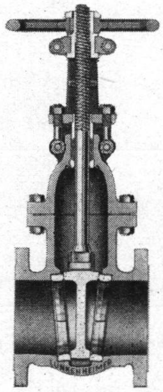
Steam and Oil

2 to 6 inches

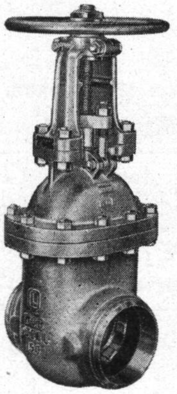
Butt welding



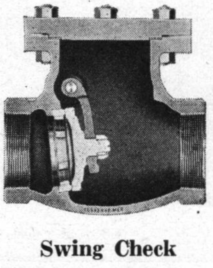
Gate
No. 1752-WB2—Oil
No. 1752-WB6—Steam
2 to 6 inches
Screwed



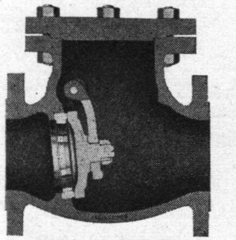
Gate
No. 1751-WB2—Oil
No. 1751-WB6—Steam
2 to 24 inches
Flanged



Gate
No. 1751X-WB2—Oil
No. 1751X-WB6—Steam
2 to 24 inches
Butt welding



Swing Check
No. 1760—WB2—
Steam and Oil
2 to 6 inches
Screwed



Swing Check
No. 1759-WB2—
Flanged
No. 1759X-WB2—
Butt welding
Steam and Oil
2 to 10 inches

No. 2 trim used on Swing Check Valves for both steam and oil.

Flanged end valves are regular with $\frac{1}{16}$ in. raised face with concentric serrations. Valves also available with special flange facings. See page 106 for drilling templates.

150 lb. butt welding end valves are regularly made with ends to match Schedule 40 pipe.

Note—See next page for 300 lb. Steel valves.

Complete Description, Specifications and Prices on Request

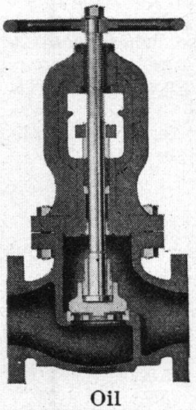
STEEL VALVES

300 POUNDS S.P. LUNKENHEIMER LARGE GLOBE, ANGLE, BLOW-OFF, NON-RETURN, AND CHECK VALVES

Carbon Molybdenum Steel

Type WD2—Oil, for 300 lbs. Oil Pressures, 900° F.; for 600 lbs. Water, Oil and Gas Pressures, 100° F.
Type WD6—Steam, for 300 lbs. Steam Pressures, 800° F.; for 600 lbs. Water, Oil and Gas Pressures, 100° F.

For steam pressures over 800° F., or where service is exceptionally severe, Stellite (No. 7) trim should be used.

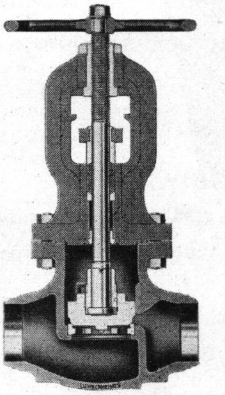


Oil
No. 1600-WD2—Globe
No. 1601-WD2—Angle

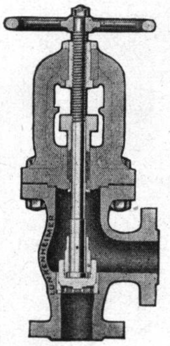
Steam
No. 1600-WD6—Globe
No. 1601-WD6—Angle

2 to 10 inches flanged.

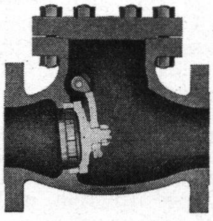
Oil
No. 1872-WD2—Globe
No. 1873-WD2—Angle
Steam
No. 1872-WD6—Globe
No. 1873-WD6—Angle
2 to 4 inches
Screwed



Oil
No. 1600X-WD2—Globe
No. 1601X-WD2—Angle
Steam
No. 1600X-WD6—Globe
No. 1601X-WD6—Angle
2 to 10 inches
Butt Welding



Blow-Off
No. 1512-WD6—
Flanged
No. 1512X-WD6—
Butt Welding
1½ to 2½ inches



Swing Check
No. 1491-WD2—
Flanged
No. 1491X-WD2—
Butt Welding
2 to 4 inches
No. 1490-WD2—
Screwed
2 to 4 inches
Steam and Oil

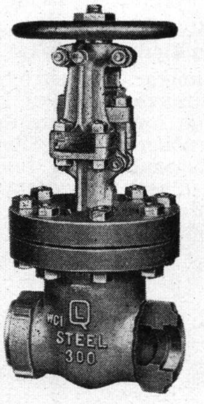
No. 2 trim used in Swing Check Valves for both steam and oil.

Note

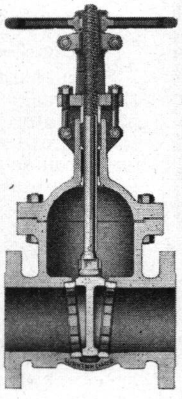
See preceding page for 600 lb. Small Globe, Angle and Check Valves.

Lunkenheimer 600, 900 and 1500 lb. Steel Valves

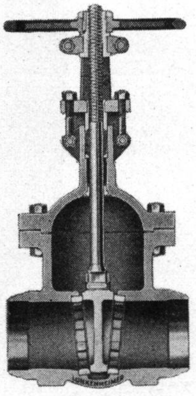
Are available in the same Types and Styles as 150 and 300 lb. valves shown. Complete description, specifications and prices on request.



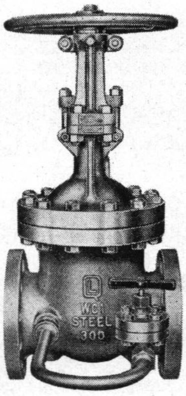
Gate
No. 1869Y-WD2—
Oil
No. 1869W-WD6—
Steam
1½ to 2 inches
Socket Welding



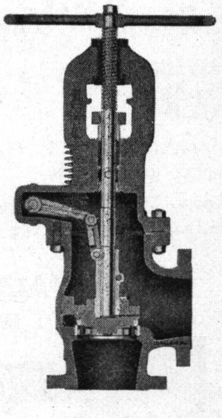
Gate
***No. 1938-WD2—**Oil
***No. 1938-WD6—**
Steam
1½ to 24 inches
Flanged



Gate
No. 1938X-WD2—
Oil
No. 1938X-WD6—
Steam
1½ to 24 inches
Butt Welding



Gate
***No. 1939-WD6—**
Flanged
***No. 1939X-WD6—**
Butt Welding
5 to 24 inches
With By-Pass
(Steam)



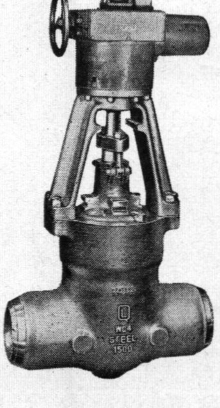
Non-Return
No. 1798-WD6—Angle
No. 1797-WD6—Globe
3 to 10 inches
Flanged

*Face to face dimensions are same as for 250 lb. Iron Gate Valve Standard, and API Standard for 300 lb. Steel Gate Valves.

Flanged end valves are regular with 1/16 in. raised faces with concentric serrations. Valves also available with special flange facings. See page 106 for drilling templates.

300 lb. Butt Welding End Valves are regularly made with ends to match Schedule 40 pipe.

LUNKENHEIMER BREECH LOCK SEAL WELDED BONNET



Available in Gate, Globe, Angle and Piston Check Valves, in 600 lb. and Higher Pressure Classes

The Breech Lock Valve is an exclusive and patented design, developed by Lunkenheimer for high pressure-high temperature services. A unique method of breech locking the body and bonnet together, in combination with a seal weld, prevents bonnet joint leakage because pressure tightness is not dependent upon gasket, ring, flanges or bolting materials. These parts, which tend to cause joint leakage due to their structural instability at high pressures and high temperatures, have been eliminated.

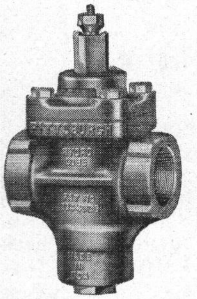
Body and bonnet are locked together by intermeshing lugs that carry the full internal pressure load acting upon the underside of the bonnet. Sealing against leakage is accomplished by a seal weld.

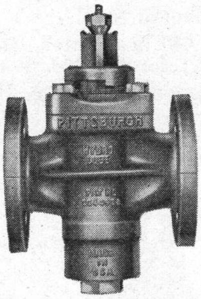
Wide experience with valves in service has proved the Breech Lock joint to be exceptionally strong and structurally stable. Joint tightness is unaffected by high pressures, high temperatures, sudden quenches, temperature variations, and creep. Maintenance is never required. However, should valve disassembly ever become necessary, the connection can be broken by chipping out the seal weld. In reassembly, perfect alignment of parts is assured by the precision machined lugs and the joint is again leakproofed by the seal weld.

Complete Description, Specifications and Prices on Request

LUBRICATED PLUG VALVES

PITTSBURGH 175 POUND "HYDRO-LUBE"





Positively lubricated by hydraulic action every time it is opened and closed. Lubricant is never exposed to the contents of the line and can be added easily regardless of the position of the plug. Lubricants are available for every type of service.

Simplicity is the keynote (no unnecessary gadgets). Therefore this valve will need less servicing and less attention, and will provide longer trouble-free life.

The ratio of the port opening to the full area is 100% in the smaller sizes, decreasing to approximately 75% for 6 in. and larger size valves.

Wrench Operated

For 125 lbs. steam pressures; for 175 lbs. water, oil or gas working pressures.

	No. 1500—Screwed Ends			No. 1501—Flanged Ends			No. 1550 1-Piece Wrench
Size, in.	Each	End to end, in.	Wt. ea., lbs.	Each	Face to face, in.	Wt. ea., lbs.	each
½	$7.00	3¾	6	$.....	....	...	$0.51
¾	7.00	3¾	6	.....	....	...	.51
1	7.00	4	6	8.40	5½	9	.51
1¼	7.80	5	9	.....	....	...	.60
1½	8.80	5	12	10.40	6½	16	.67
2	9.89	5⅞	19	11.88	7	27	.72
2½	14.40	6¾	30	16.80	7½	38	.77
3	18.15	7⅝	45	20.83	8	54	.96
4	25.08	9	85	29.04	9	100	1.10
*6W/O	.....	...	..	66.00	10½	115	4.27
*6G/O	.....	...	..	120.00	10½	165	....
*8G/O	.....	...	..	162.89	11½	265	....

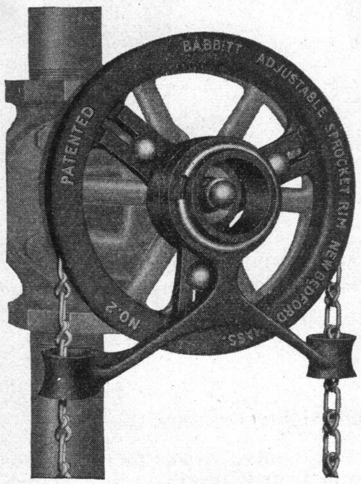
*6 and 8 in. 125 lbs. S.P., 200 lb. WOG—8 in. furnished with worm gearing only.

Note—W/O—wrench operated; G/O—gear operated.

Note—Also available in the higher pressure ranges.

VALVE SPROCKET RIMS

BABBITT ADJUSTABLE



With Chain Guides

Makes out of the way valves convenient to operate from the floor. Valves can be placed wherever they come economically and conveniently.

The rim is adjustable and may be quickly attached to any type of valve wheel whether used for controlling the flow of steam, gas, water, or other liquids, and does not interfere with the rising stem.

New split guard ring of spring steel eliminates use of cotter pins.

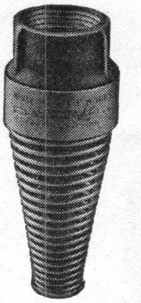
When ordering give diameter of valve wheel to be fitted and number of feet of chain required.

Nos.	Each	Chain per foot	Diam. sprocket wheel, in.	Will fit valve wheels diam., in.	Wt. each, lbs.
0	$ 6.00	$0.16	4	2 to 4	1½
1	10.00	.20	5⅞	4⅛ to 5⅞	3½
1½	13.00	.20	7½	6 to 7½	6¼
2	16.00	.20	9	7¾ to 9	7¼
2½	22.00	.32	12½	9¼ to 12½	13½
3	27.00	.32	15½	12¾ to 15½	16½
3½	38.00	.32	19	15¾ to 19	25
4	50.00	.48	22	19¼ to 22	34
4½	70.00	.48	26	22¼ to 26	37
5	80.00	.48	30	26¼ to 30	45

All above, open stock.

FOOT VALVES

STRATAFLO



All Brass, With Wire Strainer, Recommended for Centrifugal and Jet Pumps

One-piece cast red brass body and a helical wound brass spring wire strainer. Self-cleaning and indestructible. Poppets are tough, flexible, abrasion-resisting rubber, taper type, which hold tight without seepage, open easily and operate noiselessly. There are no springs, practically no flow restriction and no loss of head.

2½ in. and smaller have female thread as illustrated; 3 in. size has male thread.

No. 200—For cold water service.

No. 201—With metal poppet for oil and other corrosive liquids.

Size, in.	No. 200, each	No. 201, each	Enters pipe, in.	Length, in.	Wt. each, lbs.
¾	$ 2.00	$2.50	1¼	3¾	½
1	2.75	3.50	2	4½	⅝
1¼	3.50	4.25	2½	5¼	1
1½	5.00	6.50	3	5¾	1¼
2	8.00	9.00	3½	7	3
2½	12.00	....	4	7½	4
3	13.00	....	4	7	6½

CLEARFLOW

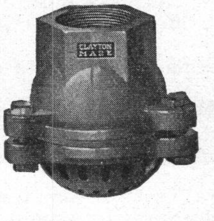
CLEARFLOW VALVES
BERKELEY CALIF
GREENE

No. 3—Cast Iron Body, Black

Small outside diameter. Unrestricted flow equal to that through open suction pipe. Watertight even at low pressure due to accurate seat and rubber facing. Silent and trouble-proof self-cleaning and sand-proof because of inclined seat and patented hinge.

Size, in.	Each	OD casing, in.	OD of valve, in.	Length, in.	Wt. each, lbs.
1¼	$ 2.25	...	2⅜	4¼	2
1½	2.25	...	2½	4¼	2
2	3.75	...	3⅛	5 5/16	4½
2½	6.00	3	3¾	6⅝	7¼
3	9.50	3½	4⅞	8	13
4	15.50	5	6½	9¾	24
6	28.00	7	8⅝	12¾	52

STANDARD



No. 540—Cast Iron Body, Black, With Strainer

Made in two sections with valve seat and good leather valve bolted between top and perforated bottom.

Openings area is much in excess of capacity of pipe connection.

Size, in.	Each	Valve leather OD, in.	Wt. each, lbs.
¾	$ 1.38	2½	1¾
1	1.38	2½	1½
1¼	1.82	2¾	2¼
1½	2.06	3	2¾
2	3.10	4¼	5¼
2½	4.38	5	7½
3	6.18	5¾	11¼
4	9.42	7	19½
6	20.42	10⅛	47

All above, open stock.

AIR PRESSURE REGULATING VALVES

NORGREN SERIES 2A

Norgren
C.A. NORGREN CO.

Furnished With Hi-Lo Spring Combination for 5 to 125 lbs. Reduced Pressure Range Unless Otherwise Specified

For reducing line pressures of up to 400 lbs. to working pressures of up to 250 lbs. and maintaining desired working pressure.

For lines carrying air and gases where close regulation of pressure is desired. Also for installation as original equipment on production machines requiring close pressure control.

All parts made of specially selected materials for long service and are machined to close tolerances for a high degree of performance.

Operating Features

Performance exceeds that of larger, more expensive regulators having larger diaphragms and valve parts.

Baffle plate and siphon tube action permits greater flow with less pressure drop.

Regulator responds faster to sudden demands for greater air volume, without excessive, momentary pressure drop.

Eliminates chatter, guards against shocks.

Simplified maintenance. Regulator can be quickly dismantled without removing from the line. All parts easily replaceable.

Compact; requires little space.

Easy to install; in-line pipe connections.

Screwed Ends

Nos.	Each	Size, in.	End to end, in.	Height over all, in.	Diam. hand wheel, in.	Wt. each, lbs.
2A1	**$ 9.90**	⅛	3⅛	6	3¼	4
2A2	**9.90**	¼	3⅛	6	3¼	4
2A3	**9.90**	⅜	3⅛	6	3¼	4
2A4	**12.70**	½	3½	6⅜	3¼	5
2A6	**31.20**	¾	5⅜	9⅛	4⅞	10
2A8	**31.20**	1	5⅜	9⅛	4⅞	10

LIQUID PRESSURE REGULATING VALVES

NORGREN SERIES 2H

Norgren
C.A. NORGREN CO.

Furnished With Hi-Lo Spring Combinations for 5 to 125 lbs. Reduced Pressure Range Unless Otherwise Specified

For reducing line pressures of up to 400 lbs. to working pressure of up to 250 lbs. and maintaining desired working pressure.

For lines carrying cold water, oil and non-corrosive liquids of up to 200° F. where close regulation of secondary pressures is desired.

Operating features same as for air valve above.

Diaphragm of water-and oil-resistant synthetic rubber reinforced with nylon cloth.

Parts of dashpot chamber are hard-chrome plated for greater resistance to wear and corrosion.

Screwed Ends

Nos.	Each	Size, in.	End to end, in.	Height over all, in.	Diam. hand wheel, in.	Wt. each, lbs.
2H1	**$11.25**	⅛	3⅛	6	3¼	4
2H2	**11.25**	¼	3⅛	6	3¼	4
2H3	**11.25**	⅜	3⅛	6	3¼	4
2H4	**14.10**	½	3½	6⅜	3¼	5
2H6	**33.00**	¾	5⅜	9⅛	4⅞	10
2H8	**33.00**	1	5⅜	9⅛	4⅞	10

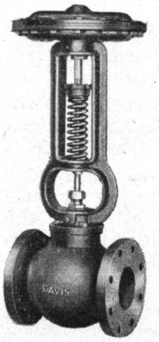
Note—When ordering be sure to specify type of liquid with which valve will be used.

Note—Both the 2A and the 2H series valves are also available with any of following reduced pressure ranges: under 15 lbs., 15 to 50 lbs., 40 to 75 lbs., 75 to 125 lbs., 125 to 250 lbs.

All above, open stock.

PRESSURE REGULATORS

DAVIS BALANCED, SPRING LOADED TYPE



No. 14—Globe Pattern For Steam, Air, Gas, Water and Oil

For 250 lbs. line pressure; reduced pressures, 150 lbs. maximum, 1 lb. minimum.

Accurate under constant operating conditions.

Diaphragm heads interchangeable and may be had in various sizes suitable for any pressure. Installation may be made in a horizontal pipe line with the diaphragm above or below the line, or in a vertical line with the stem located in a horizontal plane.

Control pressure line should be so located as to form a condensate trap to seal the diaphragm and protect it from the heat of the steam.

Size, in.	Screwed, each	Stand. Flanged, each	End to end, in. Scrd.	End to end, in. Flgd.	Wt. each, lbs. Scrd.	Wt. each, lbs. Flgd.
			Bronze Body			
½	$45.00	$......	3¼	...	31	....
¾	45.00	......	3¼	...	31	....
1	50.00	......	4¼	...	33	....
1¼	55.00	......	4¼	...	36	....
1½	60.00	65.00	5⅛	5⅛	40	45
			Semi-Steel Body, Bronze Trim			
2	$70.00	$ 75.00	7⅞	7⅞	90	95
2½	85.00	90.00	7⅞	7⅞	100	110
3	100.00	105.00	9¼	9¼	130	140
4	140.00	145.00	10¾	10¾	160	170
6	......	200.00	....	13	...	265
8	......	325.00	....	16¾	...	450
10	......	400.00	....	18½	...	600
12	......	600.00	....	22	...	925
14	......	800.00	....	24¼	...	1125

Note—Please include the following information on your order:
Whether for steam, air, gas, water, or oil.
Operating temperature.
Rate of flow to be handled per minute.
Inlet or upstream pressure.
Reduced or downstream pressure.
This also applies to Nos. 15 and 16 Davis Pressure Regulators below.

DAVIS BALANCED, COUNTER WEIGHTED DIAPHRAGM TYPE

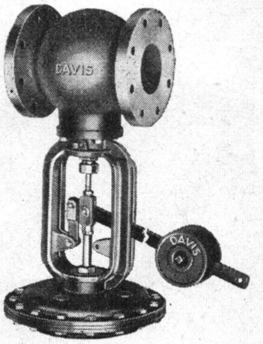
Globe Pattern For Steam, Air, Gas, Oil and Water

Large diaphragm assures sensitive, accurate regulation.

No. 15—No packing box. Long neckpiece joins valve body and diaphragm chamber.

DAVIS
CONTROL PRESSURE
DAVIS

No. 15



No. 16

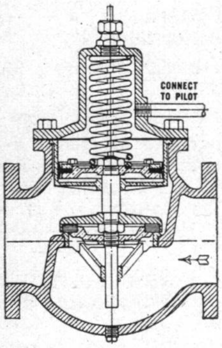
No. 16—Open yoke. Diaphragm separated from valve body where no heat can reach it by induction. For superheated steam.

Size, in.	Screwed, each	Stand. Flanged, each	End to end, in. Scrd.	End to end, in. Flgd.	Wt. each, lbs. Scrd.	Wt. each, lbs. Flgd.
			Bronze Body			
½	$45.00	$......	3¼	...	26	....
¾	45.00	......	3¼	...	26	....
1	50.00	......	3¼	...	28	....
1¼	55.00	......	4¼	...	30	....
1½	60.00	65.00	5⅛	5⅛	35	40
			Semi-Steel Body, Bronze Trim			
2	$70.00	$ 75.00	7⅞	7⅞	85	90
2½	85.00	90.00	7⅞	7⅞	95	105
3	100.00	105.00	9¼	9¼	130	140
4	140.00	145.00	10¾	10¾	170	180
6	......	200.00	....	13	...	260
8	......	325.00	....	16¾	...	430
10	......	400.00	....	18½	...	530
12	......	600.00	....	22	...	900
14	......	800.00	....	24¼	...	1080

All above, open stock.

WATER PRESSURE REGULATORS

DAVIS



No. 48—Semi-Steel Body, Bronze Trim

For 250 lbs. line pressure; reduced pressures, maximum 200 lbs., minimum 10 lbs.

Suitable for dead end operating conditions. It will maintain a given reduced pressure irrespective of the flow.

The inner valve is semi-balanced, the action being governed by the pressure maintained in the chamber above the piston. Renewable composition disc insures tight closure. Port area is full pipe area.

The pilot valve is a separate unit and may be located where convenient. When downstream pressure exceeds 40 lbs. per square inch a dual type pilot valve is furnished.

Regulators can also be furnished with all steel bodies, monel trim, and with extra heavy flanges.

Size, in.	Screwed, each	Stand. Flanged, each	End to end, in. Scrd.	End to end, in. Flgd.	Wt. each, lbs. Scrd.	Wt. each, lbs. Flgd.
2	$90.00	$ 96.00	6½	6½	85	90
2½	110.00	116.00	7	7	100	105
3	140.00	146.00	8	8	130	140
4	200.00	206.00	10¾	10¾	165	175
6	......	380.00	....	15	...	265
8	......	625.00	....	20	...	475
10	......	850.00	....	22½	...	875
12	......	1300.00	....	29	...	1300
14	......	1600.00	....	32	...	1550

Note—Please include the following information on your order:

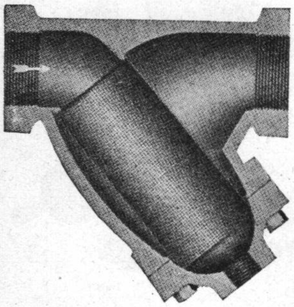
Plate operating medium (either air or water).

Maximum amount of water to be handled per minute.

Inlet or upstream pressure; reduced or downstream pressure.

PIPE LINE STRAINERS

DAVIS



No. 75—Semi-Steel Body, Brass Screen

For 250 lbs. pressures of steam, air, gas and fluids.

Affords protection to all equipment with internal moving parts. Adaptable to both horizontal and vertical downward flow pipe lines. Blow off is always at bottom end of the cylindrical screen.

All foreign matter is trapped in the cylinder and is drawn off through the blowoff. Screen is self-cleaning.

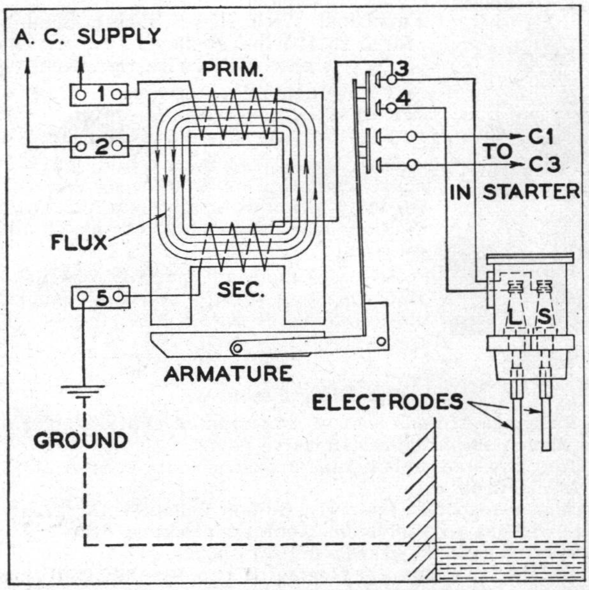
Screens for steam, air or gas have .024 perforations; screens for water have .046 perforations.

Size, in.	Screwed, each	Std. Flanged, each	Ex. Hvy. Flanged, each	End to end, in. Scrd.	End to end, in. Flgd.	Wt. each, lbs. Scrd.	Wt. each, lbs. Std. Flgd.	Wt. each, lbs. EH Flgd.
⅜	$5.00	$.....	$.....	3¼	....	2	..	..
½	5.00	.....	.....	3¼	....	2	..	..
¾	6.00	.....	.....	4	....	3	..	..
1	7.50	15.00	20.00	4½	6⅜	4	14	16
1¼	9.00	18.00	23.00	5¾	7¼	7	18	22
1½	10.00	20.00	25.00	6	7½	16	21	27
2	15.00	25.00	30.00	8	9½	26	31	37
2½	20.00	32.00	40.00	9	11¼	40	55	60
3	25.00	40.00	50.00	10	11¼	58	68	73
4	85.00	90.00	100.00	14	15½	100	130	145
6	.....	150.00	160.00	....	18¾	...	235	265
8	.....	250.00	275.00	....	21½	...	380	420
10	.....	550.00	575.00	....	26¼	...	600	650
12	.....	650.00	675.00	....	30	...	1000	1060

All above, open stock.

LIQUID LEVEL CONTROLS

B/W ALL ELECTRIC, FLOATLESS



Showing Type LH Relay Used for Pump Down Control; Controlling Circuit Open.

Also available for Pump Up control.

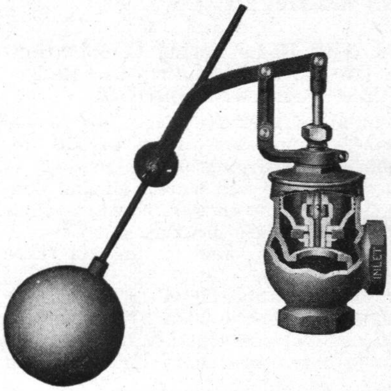
To meet the demand for liquid level controls that eliminate the troubles caused by floats or other moving parts in the liquid, we can furnish the B/W system of Floatless Liquid Level Control.

This system consists of the patented B/W induction relay and electrodes suspended from electrode holders.

Complete information and prices on request.

FLOAT VALVES

DAVIS, GLOBE AND ANGLE



No. 60—Single Seat, Pilot Stem

For 125 lbs. hydraulic pressure.

Used on the makeup line to an open tank; opens when water level recedes; closes when normal level is restored.

Tight closure assured under any working condition. Renewable disc for hot or cold water as specified.

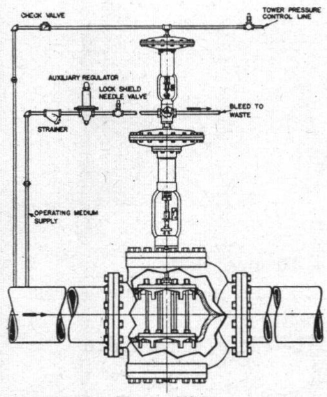
3 in. and smaller are bronze valves; larger sizes have semi-steel body with bronze trim.

Size, in.	Globe or Angle Std. Screwed, each	Globe or Angle Std. Flanged, each	Globe end to end, in.	Angle cent. to end, in.	Diam. float, in.	Wt. each, lbs. Scrd.	Wt. each, lbs. Flgd.
½	$30.00	$.....	3¾	1⅞	5	8	..
¾	30.00	.....	3¾	1⅞	5	8	..
1	32.00	.....	3¾	1⅞	5	8	..
1¼	35.00	.....	4	2	5	9	..
1½	40.00	45.00	5⅛	2 9/16	5	12	15
2	50.00	55.00	6½	3¼	6	19	27
2½	70.00	75.00	7	3½	6	25	40
3	90.00	95.00	8	4	8	38	58
4	130.00	135.00	10¾	5⅜	8	100	115
6	.....	200.00	15	7½	10	...	220
8	.....	400.00	20	10	12	...	525
10	.....	500.00	22½	11¼	12	...	725
12	.....	700.00	29	14½	12	...	1140

All above, open stock.

ALTITUDE VALVES

FISHER



Type 503

Designed to maintain desired height of level of water in towers, elevated tanks or reservoirs of water distribution systems, and to perform additional control functions.

Type 502

Maintains a predetermined level in the tower.

Type 503

To maintain a predetermined level in the tower and to allow reverse flow through the valve for distribution when the inlet pressure to the main valve is less than tower pressure.

Type 504

To maintain a predetermined level in the tower, to allow reverse flow through the valve for distribution when inlet pressure is less than tower pressure, and to automatically close the main valve, in case of a break or other cause of loss of pressure in the distribution system.

Type 505

To maintain a predetermined level in the tower, to allow reverse flow from the tower when inlet or distribution system is less than tower pressure, and to automatically close the main valve on increased distribution pressure for fire requirements.

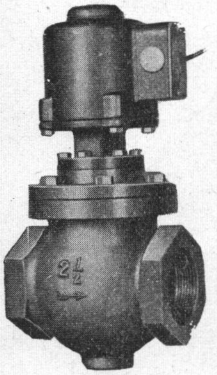
High Tensile Iron Globe Body, Duromite Bronze Trim, Flanged Ends

Low lift V-port or quick opening inner valve.

Prices Each

Size, in. ..	6	8	10	12	14	16
Type 502						
Standard	$345.00	660.00	1060.00	1580.00	1690.00	2035.00
Ex. Heavy	355.00	700.00	1100.00	1620.00	1805.00	2300.00
Type 503						
Standard	$355.00	670.00	1070.00	1590.00	1705.00	2045.00
Ex. Heavy	365.00	740.00	1110.00	1630.00	1815.00	2310.00
Type 504						
Standard	$435.00	750.00	1150.00	1670.00	1785.00	2125.00
Ex. Heavy	445.00	790.00	1190.00	1710.00	1895.00	2390.00
Type 505						
Standard	$445.00	760.00	1160.00	1680.00	1795.00	2135.00
Ex. Heavy	455.00	800.00	1200.00	1720.00	1905.00	2400.00
Av. wt. ea., lbs. ..	590	760	940	1370	1490	1770

SOLENOID VALVES



For Automatic and Remote Control of the Flow of Liquids and Gases

There are many types of Solenoid Valves available. Some of the more common types are as follows:

Safety shut-off and trip valves
Shut-off valves—packless
Shut-off valves—packed
3-way pilot valves
External pilot controlled valves
2-way and 3-way pilot controlled valves

Most of the valves mentioned above come in Explosion-proof design. If intended use calls for such design, please so indicate in your inquiry.

Information Needed for Recommendations

In making inquiry, if uncertain of the type needed for your automatic control problem, give the following information: gas or liquid handled; temperature and pressure; voltage and frequency or direct current; size of piping; if the valve is to be used on process equipment or automatic machinery control, give description of operating characteristics required; also unusual requirements.

Complete Details and Prices on Request

All above, open stock.

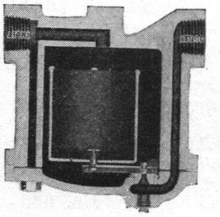
STEAM TRAPS

CLARK INVERTED BUCKET

With Duo-Step Leverage and Duo-Step Venting

Duo-step leverage uses a relatively short lever and two fulcrum points to distribute power and valve travel. A large orifice may be used and greater drainage capacity attained without increasing size of trap.

New Duo-Step Venting eliminates dribbling and loss of steam on light loads; gives snappy opening and closing and assures positive intermittent action so vital to thorough "purging" of steam systems.



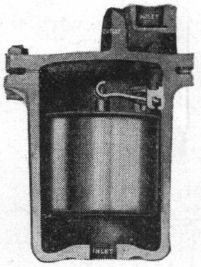
Series 70

A small type trap for general drainage such as cookers, coffee urns, drying cans, oil tank heating coils, etc. Suitable for working pressures to 200 lbs. and temperatures to 400° F.

Continuous flow capacities up to 2600 lbs. per hour according to size, seat orifice and trap differential pressure. Furnished with various size seat orifices that will operate at any pressure below and up to the following pressure ratings: 30, 50, 75, 125, 150 and 200 lbs.

Nos.	Each	Pipe conn., in.	Height, in.	Diam., in.	Wt. ea., lbs.
70	$ 8.00	½ or ¾	5⅞	4¾	5½
72	10.50	½ or ¾	6$\frac{13}{16}$	5⅜	8½
73	15.50	¾ or 1	8	5⅝	10

Note—When No. 70 is furnished with ¾ in. pipe connection, height is 5⅜ in.

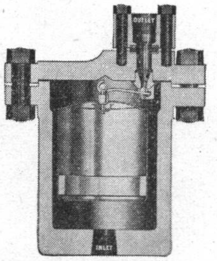


Series 80-D

For use where greater condensate capacity than Series 70 is required as in blast coils, greenhouses, steam mains, water heaters, etc. Suitable for working pressures up to 250 lbs. and temperatures to 450° F.

Continuous flow capacities up to 70,000 lbs. per hour according to size, seat orifice and trap differential pressures. Furnished with various size seat orifices that will operate at any pressure below and up to the following pressure ratings: 30, 50, 75, 100, 125, 150, 200 and 250 lbs.

Nos.	Each	Pipe conn., in.	Height, in.	Diam., in.	Wt. ea., lbs.
80-D	$19.50	½ or ¾	8	6¼	15
81-D	25.50	¾ or 1	9½	7⅞	26
82-D	33.00	1 or 1¼	10⅞	8⅜	39
83-D	42.00	1¼ or 1½	12	9½	48
84-D	60.00	1½ or 2	14¼	11½	77



Series 1800-D

Made of forged steel for high temperatures, high pressure drainage requirements, as on superheated drains, turbine bleeds, high pressure heaters, etc. Suitable for working pressures to 1000 lbs. and temperatures to 850° F.

Continuous flow capacities up to 38,000 lbs. per hour, according to size, seat orifice and trap differential pressure. Furnished with various size seat orifices that will operate at any pressure below and up to the following pressure ratings: 125, 180, 250, 300, 400, 500, 600, 700, 800, 900 and 1000 lbs.

Nos.	Each	Pipe conn., in.	Height, in.	Diam., in.	Wt. ea., lbs.
1800-D	$ 70.00	½ or ¾	10	7¼	34
1801-D	103.00	¾ or 1	10⅝	9	57
1802-D	155.00	1 or 1¼	12½	10½	93
1803-D	195.00	1¼ or 1½	13⅝	12¼	150
1804-D	230.00	1½ or 2	15	13¾	215

All above, open stock.

Note—In ordering steam traps, specify pipe connection size wanted.

RELIEF VALVES

LUNKENHEIMER, LIQUID

No. 791—Finished Bronze

Encased spring; male inlet, side outlet; bronze regulating wheel. Tapped outlet same size as inlet.

For water or liquid service, pressures 5 to 250 lbs.

Note—When ordering, state pressure at which valve is to relieve.

Size, in.	Each	Wt. ea., lbs.	Size, in.	Each	Wt. ea., lbs.
⅜	$14.00	1⅛	1½	$30.00	5⅝
½	14.50	1¼	2	43.00	11⅛
¾	16.50	1⅞	2½	65.00	16½
1	20.00	2¾	3	95.00	24½
1¼	25.00	4⅛			

No. 658—Finished Bronze

Encased spring; male inlet, side outlet. Tapped outlet connection same size as inlet.

For water, oil and other liquids; pressures 5 to 250 lbs. 500° F.

Note—When ordering, state pressure at which valve is to relieve.

Size, in.	Each	Wt. ea., lbs.	Size, in.	Each	Wt. ea., lbs.
⅜	$11.50	1 1/16	1½	$27.00	6
½	12.50	1 1/12	2	40.00	9 9/16
¾	15.00	1¾	2½	61.00	15⅜
1	18.00	2 7/16	3	90.00	23⅜
1¼	22.00	3⅞			

POP SAFETY VALVES

LUNKENHEIMER, AIR

No. 1226—Finished Bronze

With lifting lever; integral seat, male inlet, top outlet.

For pressures 5 to 250 lbs. These valves comply with paragraphs U. 3—U. 10 of the ASME Unfired Pressure Vessel Code. Valves must have lifting levers.

No. 1226 could be used for air, but not on a Power Boiler which requires approved safety valves such as Nos. 629 or 433.

Capacities in steam would be same as stamped on Nos. 629 or 433 for corresponding size and pressure setting.

Note—When ordering state pressure at which valve is to blow off.

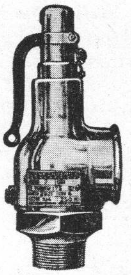
Size, in.	Each	Wt. ea., lbs.	Size, in.	Each	Wt. ea., lbs.
⅜	$17.50	1 1/12	1½	$32.00	5¾
½	18.00	1 1/16	2	42.00	9 9/16
¾	20.00	1 15/16	2½	64.00	15⅝
1	23.00	2¾	3	82.00	22⅛
1¼	27.00	3⅞			

All above, open stock.

Pressure Settings on All Lunkenheimer Pop Safety and Relief Valves can be Adjusted. However, When Used on Power Boilers They Must be Adjusted and Sealed by the Manufacturer or his Authorized Agent.

POP SAFETY VALVES

LUNKENHEIMER, STEAM



For Steam

For 5 to 250 lbs. working pressures, to 450° F.

Should be connected direct to boiler nozzle or super-heater outlet connection.

Comply with ASME Std. Boiler Code.

Encased spring; threaded male inlet.

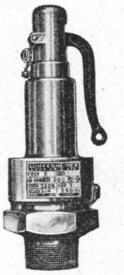
Tapped outlet one size larger than inlet.

No. 629 can be used for air. The capacities in air will be the same as stamped on No. 1226 for corresponding size and pressure setting.

Note—When ordering, state pressure at which valve is to blow off.

No. 629—Side Outlet

Size, in.	Each	Wt. ea., lbs.	Size, in.	Each	Wt. ea., lbs.
⅜	$13.00	1⅕	1½	$27.00	6 7/16
½	13.50	1¼	2	38.00	11
¾	15.00	2 1/16	2½	58.00	16⅞
1	18.00	3 1/16	3	75.00	25¾
1¼	22.00	4⅓			



No. 433—Top Outlet

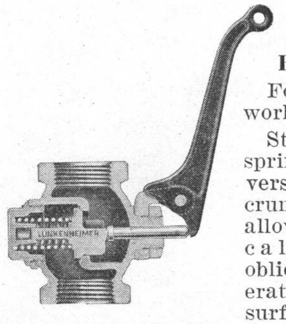
Same as No. 629 above but with top outlet.

Note—When ordering, state pressure at which valve is to blow off.

Size, in.	Each	Wt. ea., lbs.	Size, in.	Each	Wt. ea., lbs.
⅜	$12.00	1⅛	1½	$23.00	5¾
½	12.50	1¼	2	32.00	9½
¾	13.50	2	2½	50.00	15⅝
1	16.00	2¾	3	65.00	22⅛
1¼	19.00	3⅝			

WHISTLE VALVES

LUNKENHEIMER



Bronze Body

For 200 lbs. steam working pressures.

Stainless steel spring. Lever is reversible and fulcrum is adjustable, allowing for vertical, horizontal or oblique "pull" operation. Seating surfaces are regrindable and all parts are renewable.

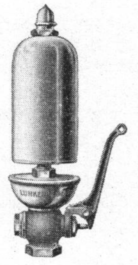
No. 444—Screwed Ends

Size, in.	Each	Wt. ea., lbs.	Size, in.	Each	Wt. ea., lbs.
¼	$6.30	½	1	$12.00	2¾
⅜	6.50	9/16	1¼	16.00	3¾
½	7.50	1¼	1½	20.00	5⅜
¾	9.50	1¾	2	30.00	9½

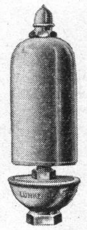
All above, open stock.

STEAM WHISTLES

LUNKENHEIMER



No. 441



No. 442

Bronze Bells

For 200 lbs. steam working pressures.

No. 441—Plain, with Valve

Diam. bell, in.	Each	Pipe conn., in.	Wt. each, lbs.
1	$11.50	¼	⅞
1½	14.50	⅜	1⅜
2	20.00	½	2⅞
2½	24.00	¾	4¾
3	30.00	¾	6
3½	45.00	1	9¾
4	58.00	1¼	11⅞
5	100.00	1½	21½
6	130.00	1½	32½

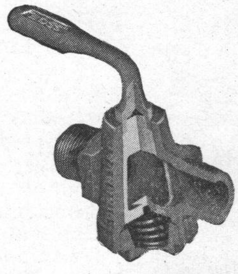
No. 442—Plain, without Valve

Diam. bell, in.	Each	Pipe conn., in.	Wt. each, lbs.
1	$ 7.50	¼	7/16
1½	10.00	⅜	15/16
2	15.00	½	2
2½	19.00	¾	3¼
3	26.00	¾	4⅞
3½	33.00	1	7 9/16
4	42.00	1¼	9¾
5	73.00	1½	18¼
6	110.00	1½	26¾

Open stock.

AIR VALVES FOR MINING AND CONSTRUCTION SERVICE

"BOSS" SELF-HONING



Self-Adjusting, Quick Opening

Full flow; no packing. Perfectly ground and lapped.

Bronze plug is firmly seated by spring tension against the harder metal of the valve body and is automatically honed to a perfect seat as handle is turned. Body is malleable iron.

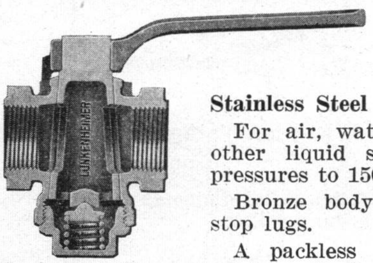
Male pipe thread both ends.

Nos.	Each	Size, in.	Wt. each, lbs.
V-44	$5.00	¾	1 13/16
V-66	5.70	1	2½

Two in a box.

"AIR-LIQUID" COCKS

LUNKENHEIMER BRONZE



Stainless Steel Spring

For air, water and other liquid service; pressures to 150 lbs.

Bronze body; with stop lugs.

A packless control device, easily operated and of rugged construction.

Proper seating is maintained by self-adjusting spring mechanism located at bottom of plug, which automatically takes up wear.

Stop lugs cast on body serve as positive open and closed stops.

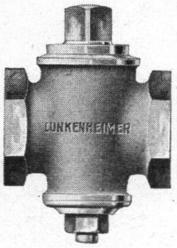
When handle is at right angle with pipe, cock is closed, when parallel, cock is open.

No. 1571—Screwed Ends

Size, in.	Each	Wt. each, lbs.	Size, in.	Each	Wt. each, lbs.
¼	$4.70	⅞	1	$ 9.40	3¼
⅜	4.80	$\frac{15}{16}$	1¼	14.50	5½
½	5.40	1⅓	1½	20.00	7⅞
¾	6.80	1⅝	2	29.00	11

BRONZE COCKS

LUNKENHEIMER STRAIGHTWAY



Square Head

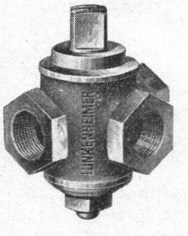
For 150 lbs. cold water, oil or gas non-shock working pressures.

Not recommended for steam service.

No. 454—Screwed Ends

Size, in.	Each	Wt. each, lbs.	Size, in.	Each	Wt. each, lbs.
⅛	$3.30	$\frac{3}{16}$	1	$ 8.00	1⅞
¼	3.30	$\frac{5}{16}$	1¼	11.00	3
⅜	3.80	$\frac{7}{16}$	1½	15.00	$4\frac{9}{16}$
½	4.40	$\frac{11}{16}$	2	23.00	$8\frac{1}{16}$
¾	6.00	1⅛			

LUNKENHEIMER THREE-WAY



Square Head, 2-Port Plug

For 150 lbs. cold water, oil or gas non-shock working pressure.

Not recommended for steam service.

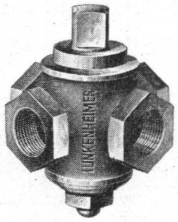
No. 1235—Screwed Ends

Size, in.	Each	Wt. each, lbs.	Size, in.	Each	Wt. each, lbs.
¼	$ 6.20	$\frac{7}{16}$	1	$18.50	3⅙
⅜	7.50	⅔	1¼	28.00	5⅓
½	9.30	1	1½	41.00	8¾
¾	13.50	1⅞	2	74.00	23

All above, open stock.

BRONZE COCKS

LUNKENHEIMER FOUR-WAY



Square Head, 4-Port Plug

For 150 lbs. cold water, oil or gas non-shock working pressures.

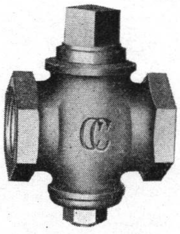
Not recommended for steam service.

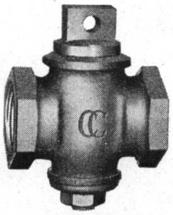
No. 155—Screwed Ends

Size, in.	Each	Wt. each, lbs.	Size, in.	Each	Wt. each, lbs.
¼	$12.00	$\frac{15}{16}$	¾	$21.00	3⅝
⅜	13.00	$1\frac{7}{16}$	1	30.00	6½
½	15.00	2⅛			

BRONZE STEAM COCKS

STANDARD


No. 250


No. 252

For 100 lbs. working steam pressures; for 150 lbs. W.O.G.

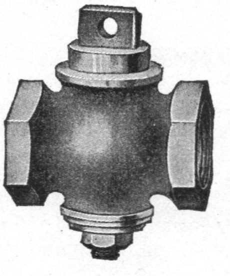
Screwed ends.

Size, in.	No. 250 Square Head, each	No. 252 Flat Head, each	Av. wt. each, lbs.
¼	$ 2.00	$ 2.00	⅓
⅜	2.30	2.30	½
½	3.00	3.00	⅔
¾	3.90	3.90	$1\frac{3}{16}$
1	5.40	5.40	1¾
1¼	7.00	7.00	2⅝
1½	9.30	9.30	3¾
2	15.00	15.00	6⅝

Note—Square head type will always be furnished unless otherwise ordered.

BRONZE GAS COCKS

STANDARD LOW PRESSURE



No. 270—Flat Head
Screwed ends.

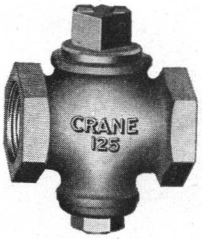
Size, in.	Each	Wt. each, lbs.
¼	$ 0.90	¼
⅜	1.05	⅜
½	2.20	$\frac{7}{16}$
¾	2.80	¾
1	3.60	1
1¼	5.00	1½
1½	6.70	$2\frac{1}{16}$
2	11.00	3¾

All above, open stock.

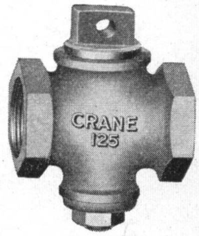
Note—The sizes of all valves, fittings, etc. are determined by the size pipe for which they are intended.

IRON COCKS

STANDARD



No. 870
Square Head



No. 871
Flat Head

For 125 lbs. steam, gas and air working pressures. For 150 lbs. cold water and oil non-shock pressures.

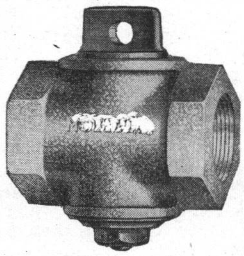
Screwed ends.

Size, in.	All Iron, each	Galv., each	With Brass Washer, each	With Brass Plug and Washer, each	Wt. each, lbs.
½	$2.50	$3.75	$2.80	$3.60	⅞
¾	2.90	4.35	3.30	4.30	$1\frac{15}{16}$
1	3.30	5.00	4.00	5.20	3¼
1¼	4.30	6.50	5.30	7.00	4½
1½	5.30	8.00	6.40	10.00	7
2	7.00	11.00	8.75	13.50	11⅛
2½	16.00	24.00	24.00	28.00	20½
3	26.00	39.00	30.00	43.00	34½

Note—In ordering, specify whether square head or flat head is wanted.

IRON BODY COCKS

BRONZE MOUNTED



For Gas, Air and Water; Galvanized

For 125 lbs. working pressures. Recommended for gas lines, air lines and water lines. Especially fine for air and water lines in mine service.

The galvanized iron body is more rugged and far stronger than brass. The galvanizing prevents rusting and the brass plug, washer and nut prevent "freezing" and make operation easy.

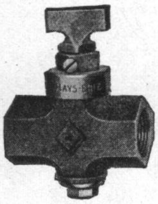
Flat Head

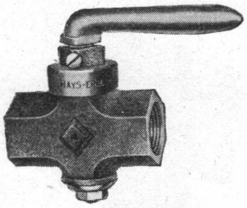
Size, in.	Each	End to end, in.	Wt. each, lbs.
½	$2.10	$2\frac{13}{16}$	$1\frac{9}{16}$
¾	2.40	$2\frac{13}{16}$	$1\frac{7}{16}$
1	3.00	3¼	2⅓
1¼	4.00	3¾	3⅝
1½	5.70	4¼	5¼
2	8.30	5⅛	$8\frac{13}{16}$

All above, open stock.

STOP AND DRAIN COCKS

GROUND KEY

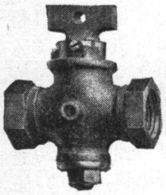

No. 1000
Tee Handle

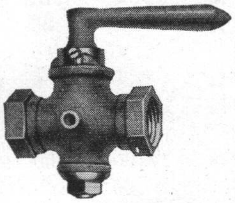

No. 1005
Lever Handle

"Hexco" Sand Cap Pattern

Heavy brass, flat way, socket head, iron handle; integral drain; tapped for iron pipe.

Size, in.	Each	Wt. each, lbs.	Size, in.	Each	Wt. each, lbs.
½	$1.24	1	1¼	$5.34	2½
⅝x¾	1.54	1¼	1½	8.92	4
1	2.97	1¾	2	15.47	6½

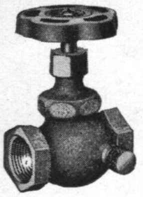

No. 1055
Tee Handle


No. 1045
Lever Handle

Heavy brass, straight way, solid non-removable handle; integral drain; tapped for iron pipe.

Size, in.	Each	Wt. each, lbs.	Size, in.	Each	Wt. each, lbs.
½	$1.00	¾	1¼	$2.61	3
⅝x¾	1.24	$1\frac{3}{16}$	1½	4.39	$4\frac{7}{16}$
1	2.10	2	2	7.57	7½

COMPRESSION



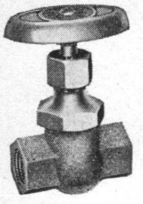
No. 3453A—Rough Brass

Extra heavy pattern; iron handwheel; independent drain in body.

With stuffing box.

Size, in.	Each	Wt. each, lbs.
½	$1.06	1
¾	1.18	1¼

STOP COCKS



No. 1105—Rough Brass

Iron handwheel. Tapped for iron pipe.

With stuffing box.

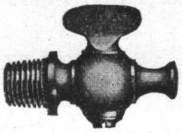
Size, in.	Each	Wt. each, lbs.
½	$0.90	1
¾	1.02	1¼

All above, open stock.

AIR COCKS

POLISHED BRASS

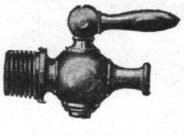
All cuts show handle in "On" position.



Tee Handle, Straight Nose

Round shoulder on Nos. 6 and 7; hexagon shoulder on Nos. 8 and 9.

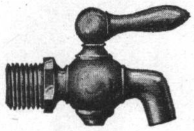
Nos.	Each	Size, in.	No. in a box	Wt. box, lbs.
6	$0.40	⅛	24	2¾
7	.45	¼	24	3
8	.50	⅜	24	4⅛
9	.60	½	12	2¼



Lever Handle, Straight Nose

Round shoulder on Nos. 12 and 13; hexagon shoulder on Nos. 14 and 15.

Nos.	Each	Size, in.	No. in a box	Wt. box, lbs.
12	$0.55	⅛	12	1½
13	.60	¼	12	1¾
14	.65	⅜	12	1¾
15	.75	½	12	3



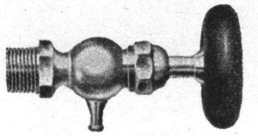
Lever Handle, Bibb Nose

Hexagon shoulder.

Nos.	Each	Size, in.	No. in a box	Wt. box, lbs.
30	$0.85	⅛	12	2
31	.95	¼	12	2⅜
32	1.05	⅜	12	3
33	1.15	½	6	1⅞

GAUGE COCKS

COMPRESSION



Finished Brass

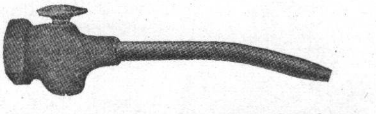
With stuffing box.

Nos.	Each	Size, in.	Wt. each, lbs.
305	$1.20	½	¾
306	1.30	⅝	⅞
307	1.45	¾	1¼

Six in a box.

AIR NOZZLES

LUNKENHEIMER



With Regrindable Seat and Disc

Bronze. No. 26 has $\frac{5}{64}$ in. diameter opening; No. 32 has $\frac{5}{32}$ in. opening.

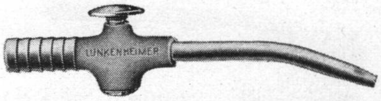
Female Pipe End

	No. 26—With Push Button		No. 32—With Lever	
Size, in.	Each	Wt. each, lbs.	Each	Wt. each, lbs.
⅛	$3.70	.21	$4.70	.31
¼	3.80	.23	4.80	.34
⅜	4.00	.26	5.00	.36

One in a box.

AIR NOZZLES

LUNKENHEIMER



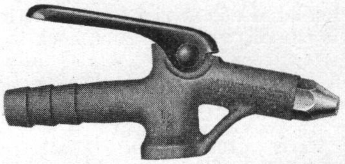
With Regrindable Seat and Disc

Bronze.

No. 96 has $\frac{5}{64}$ in. diameter opening; No. 5 has $\frac{5}{32}$ in. opening.

Hose End

	No. 96—With Push Button		No. 5—With Lever	
Size, in.	Each	Wt. each, lbs.	Each	Wt. each, lbs.
⅜	$3.80	.23	$4.50	.33
½	4.00	.25	4.70	.35



Renewable Non-Metallic Disc, With Lever

Bronze.

Flat tip and 10 in. extension tip are interchangeable with pointed tip.

Nozzle closes automatically when lever is released. Air waste is prevented when disc is wide open. Unrestricted flow area.

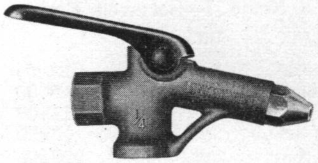
Hose End

No. 1840-PT—With pointed tip.

No. 1840-ET—With 10 in. extension tip.

No. 1840-FT—With flat tip.

Size, in.	No. 1840-PT	No. 1840-ET	No. 1840-FT	Wt. each, lbs.
⅜	$3.80	$5.60	$5.20	.40
½	4.00	5.80	5.40	.43



Female Pipe End

No. 1841-PT—With pointed tip.

No. 1841-ET—With 10 in. extension tip.

No. 1841-FT—With flat tip.

Size, in.	No. 1841-PT	No. 1841-ET	No. 1841-FT	*Wt. each, lbs.
⅛	$3.40	$5.00	$4.50	.41
¼	3.40	5.00	4.50	.39
⅜	3.70	5.40	4.90	.48
½	4.30	6.50	5.80	.52

A safe and economical method of removing dust, dirt, chips, filings, borings, sand, lint or liquid deposits. More effective and safer than brushes, rags or hand bellows.

A reducing bushing is furnished with the ¼ in. nozzle for the ⅛ in. size, and an adapter for ⅜ and ½ in. sizes.

*Nozzles with extension tip will weigh slightly more.

All above, one in a box.

FUSIBLE PLUGS

LUNKENHEIMER

LUNKENHEIMER FIG. 1888
MADE IN U.S.A.
150
M.S. WATER SIDE

No. 1888

LUNKENHEIMER FIG. 1889
MADE IN U.S.A.
M.S. FIRE SIDE

No. 1889

Approved

All plugs are marked ASME Std. A heat number stamped on the end signifies approval of the Marine Inspection Division, U. S. Coast Guard.

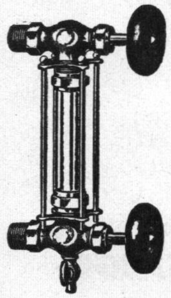
Plugs also conform to API specifications.

Size, in.	No. 1888 Inside, each	No. 1889 Outside, each	Wt. each, lbs.
⅜	$2.20	$2.20	¼
½	2.50	2.50	⅜
¾	3.20	3.20	9/16

Open stock.

WATER GAUGES

SELF-CLEANING



Polished Brass

Wood wheels; complete with brass rod glass guards and pet cock.

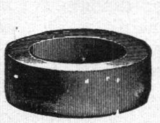
For working pressures up to 175 lbs.

Nos.	Each	Size glass, in.	No. of guards	Pipe conn., in.	Wt. each, lbs.
405	$3.75	⅝x10	2	⅜	1.7
407	4.25	⅝x12	2	½	1.8
409	5.00	⅝x12	4	½	2.25
411	5.50	¾x16	2	¾	2.5
413	6.25	¾x16	4	¾	6.25

One in a box.

GAUGE GLASS WASHERS

RUBBER



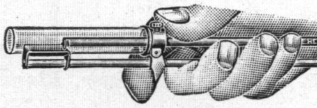
Square Flange

Size, in. ..	½	⅝	¾
Wt. 100, lbs.	½	⅝	1
Per 100 ..	$1.30	1.50	1.80

Open stock.

GAUGE GLASS CUTTERS

RED DEVIL



Steel Cutting Wheel

Pistol grip lever attachment for applying and holding pressure.

Large rest for tubes.

	Each
No. 9—13 in. long over all, cuts tube up to 7 in.; wt. each 5 oz.	**$2.50**

Six in a box.

	Per dozen
No. 42-S—Extra cutter wheels	**$2.00**

GAUGE GLASSES

PYREX RED LINE

PYREX RED LINE

When viewed through the glass the red line appears against a white background. The water in the lower part of the glass acts as a magnifier and increases the apparent width of the red line below the water level, contrasting with the section above. 1 in. diameter glasses do not have the white line background stripe.

Made of Pyrex brand glass, resistant to breakage from heat, cold or mechanical shock and to clouding and pitting.

Equally satisfactory for either high or low pressure service.

Price Per Dozen

Lgth., in.	Outside diameter, in. ½ & ⅝	¾	⅞	1
8	$ 4.00	$ 5.60	$ 6.20	$ 8.40
9	4.50	6.30	7.10	9.40
10	5.00	7.00	8.00	10.40
11	5.40	7.40	8.60	11.20
12	6.00	8.40	10.00	12.40
13	6.40	9.00	10.60	13.60
14	6.60	9.60	11.00	14.80
15	7.00	10.00	11.80	15.60
16	7.80	11.40	12.60	17.00
17	8.00	11.80	13.40	18.00
18	8.60	12.20	14.20	19.00
19	9.00	13.00	15.00	20.00
20	10.00	14.00	16.40	21.40
21	10.50	14.40	16.80	21.90
22	11.00	14.80	17.20	22.40
23	11.50	15.80	18.60	23.60
24	12.00	16.80	20.00	24.80

Intermediate lengths charged at the price of the next longer listed glass of the same diameter.

Approximate Weight Per Dozen in Pounds

Lgth., in.	Outside diameter, in. ½	⅝	¾	⅞	1
8	1⅛	1½	1¾	2⅛	2¼
9	1¼	1¾	2¼	2½	2⅝
10	1⅜	2	2½	2⅝	2¾
11	1 7/16	2 3/16	2¾	3⅜	3¾
12	1 9/16	2⅜	2 13/16	3¾	4⅛
13	1⅞	2½	2⅞	4	4½
14	1 15/16	2¾	3⅛	4½	4¾
15	2	3	3 9/16	4¾	4⅞
16	2⅛	3⅛	3⅞	5	5⅛
17	2¼	3¼	4⅛	5½	5½
18	2⅜	3⅜	4 3/16	5 9/16	5 9/16
19	2 7/16	3⅝	4⅜	5¾	5⅞
20	2½	3 11/16	4½	6	6¾
21	2¾	4¼	4¾	6¾	7¼
22	2⅞	4 5/16	5¼	7	7¾
23	3	4⅜	5⅜	7 5/16	8
24	3 3/16	4 7/16	5½	8 1/16	8¼

Recommended Maximum Working Pressures

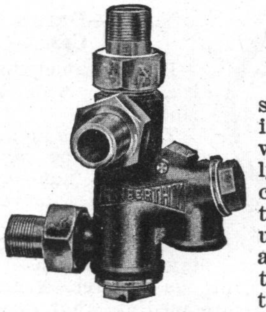
In pounds per square inch.

Length, in. ..	Up to 10	11–20	21–24
Pounds	500	420	340

One-half dozen in a package.

INJECTORS

PENBERTHY, AUTOMATIC



Suction Left, Overflow Front, Discharge Back

A perfect restarting machine; if the current of water be suddenly broken by any cause, the injector will again pick up the water and automatically establish the flow to the boiler, without manipulation of a valve.

Each injector is carefully tested and must work on the following points before leaving the factory:—

Start Low—20 to 25 lbs. steam on 3 ft. lift.

Work High—150 to 170 lbs. steam on 3 ft. lift.

Lift Water—20 to 24 ft. on 60 to 80 lbs. steam.

Handle Hot Water—125° to 130° at 60 to 80 lbs. steam, 115° to 120° at 100 lbs. steam, 95° to 104° at 125 lbs. steam.

By placing a short piece of pipe having a stop cock in overflow and closing after injector has started, water 8° to 10° hotter can be delivered, but injector is rendered non-automatic while stop cock is closed.

Solid Brass, Rough Body, Trimming Finished

All sizes complete with strainer.

Size, Nos.	Each	Pipe conn., in.	Wt. each, lbs.
OO-21	$16.00	⅜	2 11/16
AA-21	20.00	½	3⅝
BB-21	30.00	¾	5
CC-21	45.00	1	7⅜
DD-21	60.00	1¼	11⅜
EE-23	90.00	1½	21¾

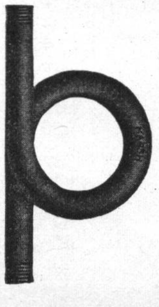
Ratings

Size, Nos.	HP based on ordinary tub. boiler	HP based 30 lbs. water per HP per hr.	*Gallons —Per hour— Max.	Min.
OO-21	4- 8	6- 12	80	45
AA-21	12- 22	15- 30	180	100
BB-21	20- 45	25- 60	360	180
CC-21	45- 80	50-100	600	325
DD-21	75-135	85-165	1000	525
EE-23	115-255	150-320	1900	850

*1 to 3 ft. lift, 60 to 110 lbs. steam pressure.

One in a box.

STEAM GAUGE SIPHONS



Straight Pattern

No steam gauge warranted unless connected with a siphon or its equivalent.

¼ in. iron pipe size.

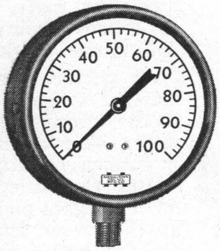
	Each
Iron	**$0.85**
Brass	**1.35**

Weight each ⅜ pound.

Open stock.

PRESSURE GAUGES

SINGLE SPRING



No. 23—Drawn Steel Case

Black enamel finish, with black ring.

Trumpet brass bourdon tube. Independent non-corrosive brass movement; white dial.

¼ in. male bottom connection.

For use on air, oil, gas, water, steam or any other pressure medium that does not attack brass. Install siphon under gauge when used on steam.

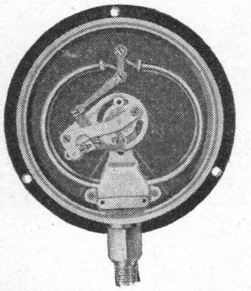
Standard Graduations

Total graduations, lbs.	Figure intervals, lbs.	Graduating marks, lbs.
15	3	½
30	5	1
60	10	2
100	10	2
160	20	4
200	20	4
300	30	10
400	50	10
600	100	20
800	100	20
1000	100	20

Diam. dial, in.	Each	Wt. each, lbs.
2½	$3.25	7/16
3½	4.10	1
4½	5.10	1½

One in a box.

DOUBLE SPRING



No. 31—Cast Iron Case

Black enameled. Plain steel ring black enameled.

Trumpet brass bourdon tubes, cut, rolled and shaped to minimize vibration and make them self-draining and non-freezing.

Rotary type movement, bushed; independent mounting. Brass top and bottom plates with bronze bushings and bronze sector and pinion staff.

¼ in. male bottom connection.

For all pressure mediums that will not deteriorate brass.

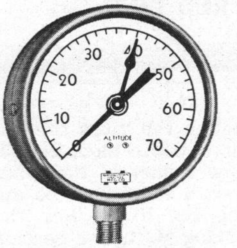
Standard Graduations

Total graduations, lbs.	Figure intervals, lbs.	Graduating marks, lbs.
60	10	2
100	10	2
160	20	4
200	20	4
300	30	10
400	50	10
600	100	20

Diam. dial, in.	Each	Wt. each, lbs.
4½	$10.70	3½
6	18.60	5⅜
8½	33.25	10¼

One in a box.

ALTITUDE GAUGES



No. 43—Drawn Steel Case

Black enamel finish with black ring.

Trumpet brass bourdon tube. Brass movement, independent mounting; white dial.

Used for indicating the height of water in tanks, reservoirs, pipes and heating systems.

The red pointer can be set to the height to be maintained.

¼ in. male bottom connection.

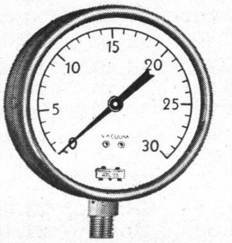
Standard Graduations

Total graduations, ft.	Figure intervals, ft.	Graduating marks, ft.
30	5	1
70	10	2
100	10	2
160	20	4
200	20	4
300	30	10
400	50	10

Diam. dial, in.	Each	Wt. each, lbs.
3½	$4.90	1
4½	5.90	1½

One in a box.

VACUUM GAUGES



No. 22—Drawn Steel Case

Black enamel finish; black ring.

Trumpet brass bourdon tube. Brass movement, independent mounting; white dial.

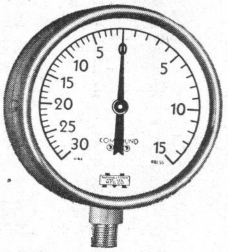
¼ in. male bottom connection.

Total graduation 30 in. of mercury, 5 in. figure intervals, 1 in. graduating marks.

Diam. dial, in.	Each	Wt. each, lbs.
2½	$3.45	7/16
3½	4.30	1
4½	5.50	1½

One in a box.

COMPOUND GAUGES



No. 45—Drawn Steel Case

For indication of both pressure and vacuum.

Same construction as No. 22 vacuum gauge.

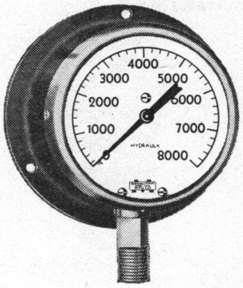
Diam. dial, in.	Each	Wt. each. lbs.
2½	$3.85	7/16
3½	4.30	1
4½	5.50	1½

Standard Graduations

Total graduations,		Figure intervals,		Graduating marks,	
lbs.	in.	lbs.	in.	lbs.	in.
15	30	5	5	1	1
30	30	5	5	1	1
60	30	10	10	2	2
100	30	10	15	2	5
150	30	15	15	5	5
200	30	25	30	5	10
300	30	30	30	10	15

One in a box.

HYDRAULIC GAUGES



No. 51—Cast Iron Case

Black enameled. Plain steel ring, black enameled.

Bored tool steel bourdon tube with threaded ends to assure tightness at socket and end cap.

Rotary type movement of monel metal, rugged and durable, with slotted link to protect pointer or sudden pressure release.

Forged brass male bottom connection, ¼ in. on 3½ in. size, ½ in. on larger sizes.

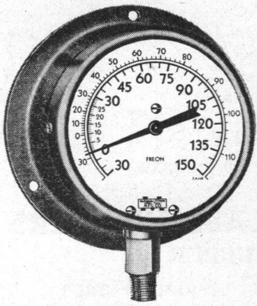
Standard Graduations

Total graduations, lbs.	Figure intervals, lbs.	Graduating marks, lbs.
1000	100	20
1500	200	50
2000	200	50
3000	300	50
4000	500	100
5000	500	100
6000	1000	100
8000	1000	200
10000	1000	200
15000	3000	200
20000	2000	400
30000	3000	500

Diam. dial, in.	Each	Wt. each, lbs.
3½	$21.90	1
4½	24.90	3¾
6	34.50	6¼
8½	69.50	11⅝
12	160.00	16⅛

One in a box.

AMMONIA GAUGES



No. 54

For installation on ammonia refrigerating machines, etc.

Chrome molybdenum steel bourdon tube.

Monel metal movement, independent mounting; designed for durability and corrosion resistance.

¼ in. forged steel male bottom connection.

Standard Graduations

One scale printed in red showing corresponding temperature in degrees F.

Total graduations,		Figure intervals,		Graduating marks,	
lbs.	in.	lbs.	in.	lbs.	in.
150	30	15	30	6	10
300	30	30	30	10	10

No. 52—Drawn Steel Case, Black

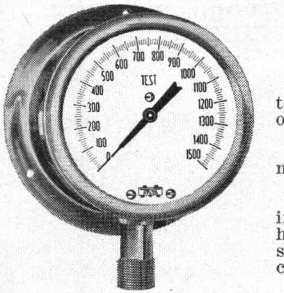
Diam. dial, in.	Each	Wt. each. lbs.
2½	$11.65	11/16
3½	13.10	1

No. 54—Cast Iron Case, Black

Diam. dial, in.	Each	Wt. each. lbs.
4½	$19.70	3⅝
6	27.15	5½
8½	64.45	7 13/16
12	87.50	15¼

One in a box.

TEST GAUGES



No. 61—Cast Brass Flanged Case

Cast brass threaded ring.

Trumpet brass bourdon tube for pressures to 1000 lbs., bored tool steel for pressures over 1000 lbs.

Etched silvered brass dial.

Precision brass movement up to 1000 lbs., monel movement over 1000 lbs.

Accurate to ½ of 1% of total scale.

Forged brass male bottom connection. 3½ in. in all ranges, and 4½ in. up to 1000 lbs. have ¼ in. connection; 4½ in. in larger pressure ranges and all larger sizes have ½ in. connection.

Standard Graduations

	Vacuum in. of Hg.	Pressure, lbs. per sq. in.								
Total grad.	30	15	30	60	100	160	200	300	400	600
Fig. intervals	2	1	2	5	10	20	20	20	40	40
Grad. Marks										
3½-4½-6 in.	¼	⅛	¼	½	1	1	2	2	4	4
8½-12 in.	⅛	1/16	⅛	¼	½	½	1	1	2	2

Diam. dial, in.	**3½**	**4½**	**6**	**8**	**12**
Wt. each, lbs.	1¼	3¾	6⅛	13	18¼
Each	**$75.00**	**97.50**	**130.00**	**205.00**	**235.00**

One in a box.

PRESSURE AND VACUUM RECORDING GAUGES

TAG

With 10 in. Chart; One Pen

Smooth black enameled weatherproof case for wall mounting, without flange; similar in appearance to tag recording thermometer models 13550-13568 inclusive. Back or bottom connected as desired. Flanged case for flush mounting supplied at no extra charge when specified.

Chart drive mechanism is a 24-hour electric or spring propelled drive as selected.

¼ in. SPT brass union connection. Stainless steel connection can be furnished at an extra charge.

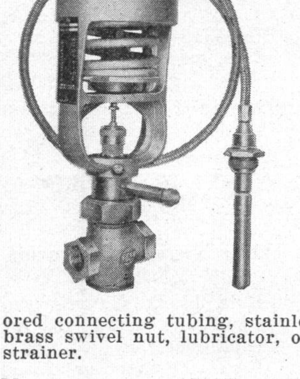
	Each
No. 12403—0 to 15 lbs. pressure or vacuum to 0 to 600 lbs. pressure; with 10 in. chart; one pen; wt. each 23 lbs.	$74.50

One in a box.

Note—In ordering specify range, type of chart drive mechanism, and back or bottom connection.

Note—Also available with 9 or 12 inch charts.

TEMPERATURE CONTROLLERS



TAG SELF-OPERATING

Direct Acting

Entirely self-contained and self-operating, requiring neither compressed air nor electricity.

Used widely on such applications as hot water storage heaters, hot water tanks, canning retorts, exhaust boxes, textile dryers, pasteurizers, and washing machines.

Standard ranges for various applications above room temperature are supplied with a bulb 7 in. long and a ¾ or 1 in. SPT union connection.

Ranges include:
100 to 145° F 155 to 255° F 295 to 345° F
135 to 200° F 220 to 290° F 335 to 425° F
140 to 180° F

Ranges below room temperature, including 5 to 85° F, 40 to 120° F, and 90 to 180° F require a bulb 17 in. long with a 1 in. SPT union connection.

Complete with 10 ft. of flexible armored connecting tubing, stainless steel bulb and union connection hub, brass swivel nut, lubricator, one box of 24 sticks of grease, and steam strainer.

Nos.	**1500C**	**1502C**	**1504C**	**1506C**	**1508C**	**1510C**
Size valve, in.	½	¾	1	1¼	1½	2
Each	$68.00	72.50	79.50	84.50	95.00	110.00

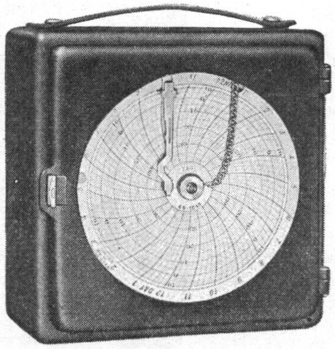
Weight each 23 pounds.

One in a box.

Note—Reverse acting controllers, ½ to 2 in. can be furnished at an extra charge.

MINIATURE RECORDING THERMOMETERS

TAG



Simple, rugged spring and bellows temperature actuating mechanism not affected by vibrations and highly resistant to shock.

24 hour spring propelled chart, drive, single pen.

5¾ in. high over all, 5¾ in. wide over all, 4¼ in. deep.

Complete with ink and 100 charts in any range listed below.

+30 to 130° F
0 to 76° F
0 to 50° F
+30 to 60° F
—10 to 40° F
—30 to 30° F
0 to 55° C
—20 to 20° C

Self-Contained Type

With bulb mounted directly on back of case.

	Each
No. 8475—Wt. each 3½ lbs.	$48.00

Distance Recording Type

Same as No. 8475 except bulb connected to 5 ft. of flexible copper capillary tubing.

	Each
No. 8474—Wt. each 3½ lbs.	$50.00

One in a box.

Note—Two-pen Miniature Recorders also available as well as single-pen recording pressure gauges for pressure or vacuum pressure.

RECORDING THERMOMETERS

TAG

Smooth black enameled weatherproof case for wall mounting without flange. Back or bottom connection as selected. Flanged case for flush mounting supplied at no extra charge when specified.

Chart drive mechanism is a 24 hour electric or spring-propelled drive as selected.

Complete with five feet of regular flexible tubing. Plain stainless steel bulb; 100 charts and ink set.

Actuation	Range between	Tube length
Mercury	—40 and +1000° F	up to 25 ft.
Vapor tension	—20 and + 500° F	up to 250 ft.
Gas-filled	—60 and + 800° F	up to 250 ft.

12 in. Chart, 4 15/16 in. Pen Travel

	Each
No. 13550—Mercury actuated	$122.75
No. 13552—Vapor tension actuated	113.00
No. 13553—Gas-filled	119.50

10 in. Chart; 4 1/16 in Pen Travel

	Each
No. 13565—Mercury actuated	$119.75
No. 13567—Vapor tension actuated	110.00
No. 13568—Gas-filled	116.50

Weight each 23 pounds.

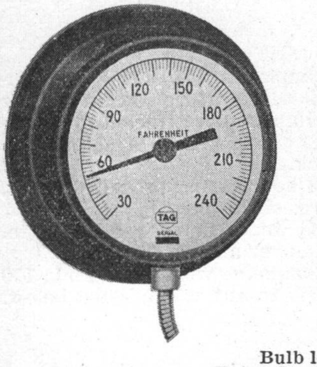
One in a box.

Note—In ordering, specify range, type of chart drive, and back or bottom connections.

Note—Charts for Gauges and Thermometers, available in all ranges and sizes, in standard package of 100.

THERMOMETERS

TAG DIAL INDICATING



Bakelite Case

Flange at back for wall mounting; 5 in. dial; 5 ft. of spiral brass armored tubing; plain or union connection brass bulb; ½ in. brass union connection fittings; in any range or bulb size listed below.

Range	Bulb length, in. Union Conn.	Bulb length, in. Plain
—40 to +65° F.	3	5¼
+10 to +130° F.	5	7¼
40 to 185° F.	5	7¼
70 to 215° F.	5	7¼
110 to 265° F.	3	5¼
200 to 335° F.	3	5¼

	Each
No. 10176—Wt. each 2¼ lbs.	$25.00

One in a box.

TAG CHEMICAL

Standard Grade, Etched Stem, Fahrenheit Scale

Made of special annealed glass; mercury tube; red and black pigments used to fill in lines, figures and letters.

Accurate to within ½ scale division in ranges 32 to 212° F., and from ½ to 1 scale division above and below these ranges.

Total immersion.

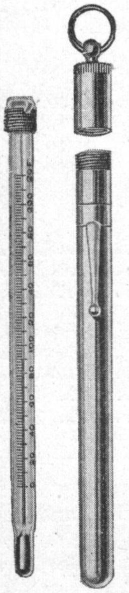
Nos.	Each	Range deg. F.	Grad. deg. F.	Lth., in.
51200	$2.25	—40 to 120	1	12
51205	2.25	0 to 220	1	12
51212	2.25	30 to 300	1	12
51216	2.70	30 to 400	2	12
51222	3.25	30 to 600	2	15
51228	4.25	30 to 800	2	15
51234	6.60	30 to 950	5	15

Weight each, 12 in., 4 oz.; 15 in. 5 oz.

One in a box.

Note—Can be furnished with armored cases.

TAG POCKET



Standard Grade, Etched Stem, Fahrenheit Scale

Mercury filled.

In white metal case with pocket clip. Length of case 6 in.

Mercury filled.

No.	51600A
Range, deg. F..	—30 to 120
Grad., deg. F..	2
Wt. ea., oz. ..	4
Each	$1.50

No.	51605
Range, deg. F..	+30 to 220
Grad., deg. F..	2
Wt. ea., oz. ..	4
Each	$1.50

Replacement Tubes

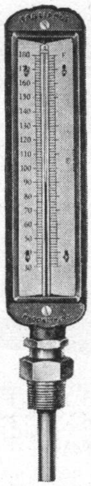
5½ in. long.

For Nos.	.51600A	51605
Each	$1.30	1.30

One in a box.

THERMOMETERS

TAG INDUSTRIAL



Fixed Connection; Without Extension Neck

V-shaped brass scale, silvered, with black figures and graduations, removable glass front. Red-reading glass with magnifying lens-front.

Brass hub, brass stem, stainless steel bulb chamber. 2½ and 3 in. stems are all stainless steel.

9 in. scale case. ¾ in. SPT connection.

Note—Also available in 7 and 12 in. scale cases; also union and separable socket connection, and special ranges as required.

Straight Form

Standard Fahrenheit ranges: —40 to 110, +30 to 180, 30 to 240, 170 to 270 and pressure 30 to 300, 50 to 400.

Nos.	Each	Length stem, in.	Wt. each, lbs.
02002½	$16.00	2½	3
02003½	16.75	3½	3¼
02006	17.50	6	4
02009	18.50	9	4¼
02012	19.50	12	5

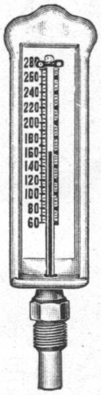
Angle Form

Standard Fahrenheit ranges: —40 to 110, +30 to 180, 30 to 240.

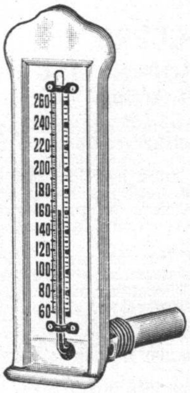
Nos.	Each	Length stem, in.	Wt. each, lbs.
03002½	$17.50	2½	3
03003½	18.25	3½	3¼
03006	19.00	6	4
03009	20.00	9	4½
03012	21.00	12	5

One in a box.

HOT WATER



No. 670



No. 680

White Enameled

For hot water or steam heating boilers.

Frame is fabricated of enameling iron. It is finished in vitrified porcelain enamel and mounted on the stud with a set screw that permits rotating the instrument in the proper position for convenient reading.

The graduations, figures and letters are fused into the porcelain enameled finish making a scale legible and easy to clean.

Scale range 40° to 240° F.

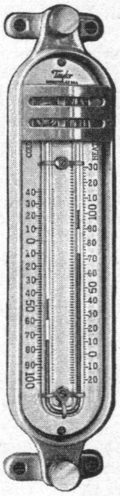
Stud threaded for ½ in. pipe.

	Each
No. 670—Straight stem; wt. each 8 oz.	**$1.50**
No. 680—Angle stem; wt. each 9 oz..	**1.75**

One in a box.

THERMOMETERS

TAYLOR OUTDOOR, MAXIMUM-MINIMUM



Gray Plastic Case

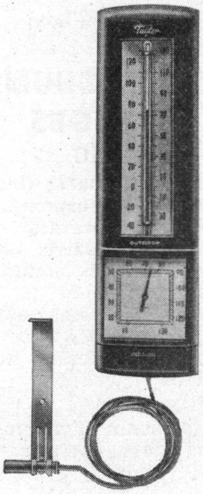
A high quality outdoor window or wall thermometer which indicates the present temperature and both the highest and lowest reading since last setting.

Individually graduated white enameled scale. With resetting magnet. Range 30° to 120° F.

	Each
No. 5448—11½ in. long; wt. each 5 lbs.	$10.00

One in a box.

TAYLOR INDOOR-OUTDOOR



Walnut Plastic Case

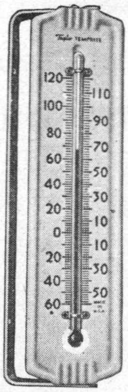
Installed indoors, it indicates both outdoor and indoor room temperature. Outdoor temperature reading is indicated by Permacolor tube mounted in case and connected by capillary tubing to sensitive bulb mounted outside of window.

Bimetallic movement indicates indoor temperature.

	Each
No. 1AP2 — 9½ in. long; wt. ea. 2¼ lbs..	$7.50

One in a box.

TAYLOR OUTDOOR WINDOW



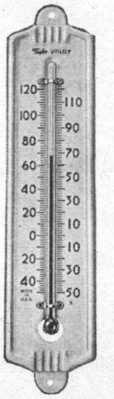
White Vitreous Enamel Scale

Black numerals and graduations fired in for permanence; large, easy-to-read Permacolor tube. Steel mounting bracket.

	Per dozen
No. 5316—8½ in. long; wt. per dozen 8¼ lbs.	$21.00

One in a box, one dozen in a carton.

TAYLOR UTILITY OUTDOOR



White Vitreous Enameled Scale

Bold black figures and graduations fired in for permanence.

Red Permacolor filled tube with magnifying lens.

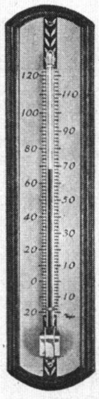
For wall mounting.

	Per dozen
No. 5127—8½x2 in.; wt. per dozen 5¾ lbs..	$21.00

One in a box, one dozen in a carton.

THERMOMETERS

TAYLOR INDOOR



Wood Back

Hand-rubbed walnut finish; satin finish brass scale with black figures and graduations.

Permacolor tube with magnifying lens for easy reading.

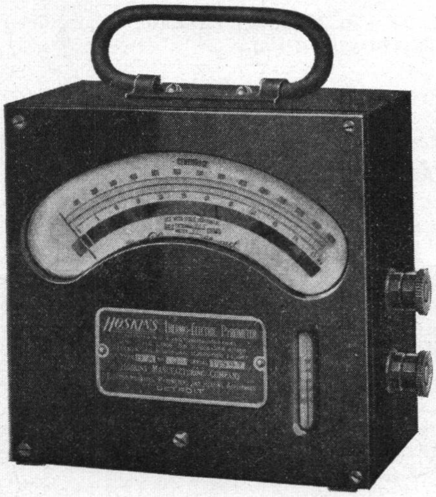
For wall mounting.

	Per dozen
No. 5126—6 in. long; wt. per dozen 4¼ lbs.	$18.00

One in a box, one-half dozen in a carton.

PYROMETERS

HOSKINS PORTABLE



Type AH—High Resistance

Plain, direct reading; an accurate instrument that has wide use for "check" purposes.

So that the temperature of the "cold-end" of the thermocouple may be known, this being located at the meter, the instrument is equipped with a small thermometer.

	Each
Type AH—6¼x6x3 in.; wt. each 5 lbs.	$133.70

One in a box.

Type PA—Low Resistance

Fills the need for a rugged portable instrument for measuring the temperature of molten metals and miscellaneous work.

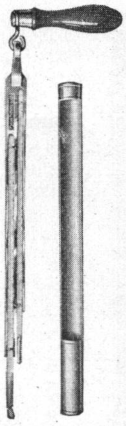
Standard scales are 2000° F. and 2500° F., also their centrigrade equivalents.

	Each
Type PA—6¼x6x3 in.; wt. each 5 lbs.	$114.50

One in a box.

SLING PSYCHROMETERS

TAYLOR



U. S. Weather Bureau Type

Affords free circulation of air to the thermometer bulbs. Generally accepted as the standard method of checking humidity.

Two 12 in. engraved stem thermometers, ranged from 30° to 120° F. in 1° divisions.

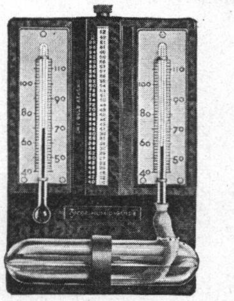
Mounted on cast aluminum frame with swivel handle. Complete with protecting case, spare wicks and chart.

	Each
No. 1321—Complete; wt. each 3 lbs.	$9.00
No. 1321-A—Extra engraved thermometers for No. 1321	2.50
Extra Wicks .... Per dozen	1.00

One in a box.

HYGROMETERS

TAYLOR



Mason's Form

Uses wet and dry bulb method of measurement, the most accurate known to science.

Mercury-filled tubes, magnifying lens. Approximate range 30° to 120° F.

Scales are white enamel finished with black-filled graduations. Mounted on mahogany panel with insulating supports and siphon reservoir.

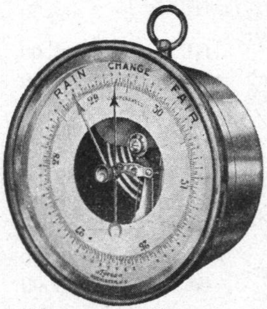
With spare wicks and chart.

	Each
No. 5532—8½x4½ in.; wt. each 2½ lbs.	$7.50

One in a box.

BAROMETERS

TAYLOR ANEROID



Brass Case

5 in. lacquered case; white enameled dial with black numerals and graduations. Good grade movement. Dial has open center showing barometer movement. Dial graduations to .02 in.

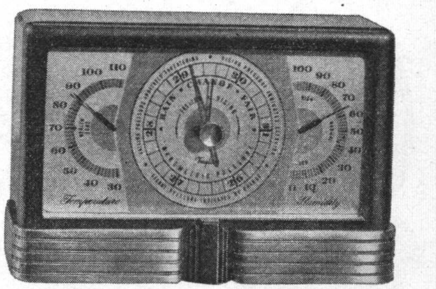
Also available at no extra cost for medical and scientific use, with dial engraved to give metric measurements in addition to ordinary inch scale.

	Each
No. 2202—For elevations to 3500 ft.; wt. each 2½ lbs.	$21.00
No. 2202-23/29—For elevations between 2900 and 7100 ft.	25.00

One in a box.

BAROMETERS

TAYLOR BAROGUIDE



"Fairmont Jr." Combination

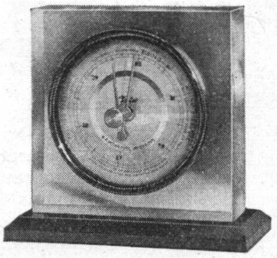
A triple-service instrument with deep maroon plastic case and gold-finished reed trim and dials. Simplified forecast dial has large, easy-to-read figures.

Altitude adjusting back plate. 8x5¼x2¼ in.

	Each
No. 2591—For elevations from 0 to 3500 ft.	$13.50
No. 2591-HA—For elevations from 3500 to 7000 ft.	15.50

Weight each 4 5/16 pounds.

One in a box.



"Regis" Standing Model

A smart looking, dependable instrument.

Crystal clear plastic black and gold finished base and bezel.

Simplified forecast dial and handy altitude adjustments on back. 4⅞x4⅛x1½ in.

	Each
No. 2487—For elevations from 0 to 3500 ft.	$12.00
No. 2487-HA—For elevations from 3500 to 7000 ft.	14.00

Weight each 1¾ pounds.

One in a box.

"Berkley"

Simplicity of design is the key to the dignified beauty of this model.

Forecast dial set in handsome mahogany finished case with chrome bezel and silvered dial; black numerals.

Altitude adjusting back plate. 5½ in. diameter case.

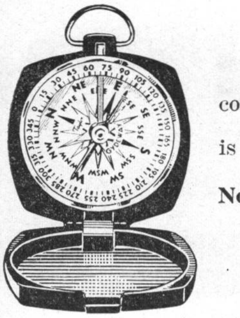
	Each
No. 2510—For elevations from 0 to 3500 ft.	$9.00
No. 2510-HA—For elevations from 3500 to 7000 ft.	10.00

Weight each 1¾ pounds.

One in a box.

POCKET COMPASSES

TAYLOR



"Gydeway"

Attractive maroon plastic case with hinged cover; jeweled center.

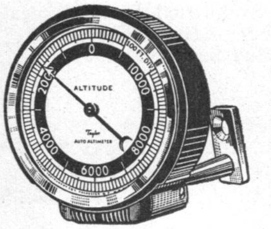
Sensitive bar needle over aluminum dial is automatically locked when case is closed.

	Per dozen
No. 2935—2 in. diam.; wt. per dozen 1½ lbs.	$30.00

One in a box, one dozen in a carton.

AUTO ALTIMETERS

TAYLOR



Brown Plastic Case

Quality movement. Easily attached to windshield center post with one screw. Instrument reset by handy rim lever. Adjustable bracket for wide angle readability.

Indicates height of mountain and depth of valley.

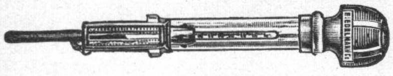
Range from 0 to 15,000 ft.

	Each
No. 2068-F—2¾ in. diameter; wt. each 11 oz.	$12.00

One in a box.

STORAGE BATTERY TESTERS

THERMO BREAK-NOT



All-Purpose

For ordinary battery testing and in conjunction with high-speed chargers.

Float range is from 1.060 to 1.320 specific gravity. Thermometer reads from 0° F. to 160° F.; with corrections for specific gravity change in temperature above and below 80° F. Correction scale is one point specific gravity for each 2½° of temperature.

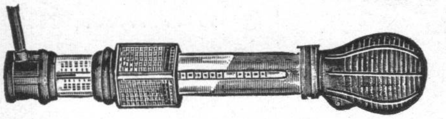
Hexagon tip and bulb protect instrument against breakage.

	Each
No. 40A—Wt. each 7 oz.	$1.25

One in a box.

ANTI-FREEZE TESTERS

ZERO-TESTER



Especially designed for testing anti-freeze solutions of alcohol, Zerone, Prestone brand ethylene glycol, and Zerex.

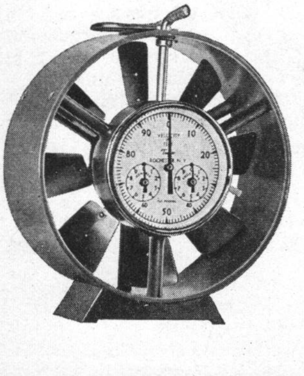
Completely self-contained; easy to clean; no extra parts or charts to become lost.

	Each
No. 460—Wt. each 1½ lbs.	$3.60

One in a box.

ANEMOMETERS

TAYLOR



Biram's, Jeweled

For registering velocity of air currents in mines, tunnels, furnace flues, etc.

Three dials reading to 10,000 feet. Fan jeweled movement, disconnector, automatic zero-setting attachment, correction chart; in carrying case.

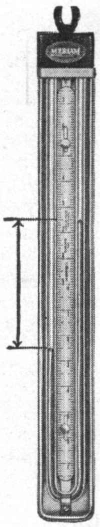
For velocities from 200 to 3000 feet per minute.

	Each
No. 3132—4 in. diam.; wt. each 4 lbs.	$90.00

One in a box.

MANOMETERS

MERIAM



Available in various types to meet different pressure and service requirements for the accurate measurement of pressure, vacuum, and differential pressure of liquids and gases from only a few ounces to many pounds.

The U-type clean-out Manometer illustrated is designed for operating pressures up to 100 lbs. and furnished in standard scale ranges of 6, 10, 15, 20, 24, 30, 36 and 50 in. A scale graduated in lineal inches and tenths will be furnished unless one of the following graduations is specified.

1. Inches of water using Mercury (6 to 50 in.)
2. Pounds and inches using Mercury
3. Pounds and ounces using Mercury (6 to 50 in.)
4. Ounces and eighths using water (6 to 50 in.)
5. Centimeters and millimeters (6 to 50 in.)
6. Inches and tenths using Meriam red oil
7. Inches and fifths of water using Meriam No. 3 fluid (6 to 50 in.)

Special scales having graduations other than those listed above can be furnished to meet any requirement.

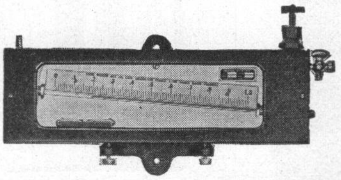
All Meriam U-type Manometers have ¼ in. PT female outlets for line connection.

15 in. size illustrated is 19½ in. high, 2¼ in. wide, 1¼ in. deep, and weighs 3 lbs. Other sizes in proportion.

Prices on Request

DRAFT GAUGES

MERIAM



Direct Indicating

Built with inclined tube to give increased scale length and permit accurate readings of fractional inches of water.

Model GP single tube gauges illustrated are widely used for measuring low pressures, drafts and differentials and are built in ranges up to 4 in. of water using Meriam red oil.

Furnished complete with scale petcock, ⅛ in. pipe size nipple and red oil, in the following ranges.

Single Tube

Nos.	Each	Max. range, in.	Scale length, in.	Scale multiplier	Unit scale div. in water
GP 1	$30.00	.5	11	22	.01
GP 2	30.00	1.0	11	11	.01
GP 3	30.00	1.5	11	7.3	.01
GP 4	30.00	2.0	11	5.5	.01
GP 5	36.00	3.0	12	4	.02
GP 6	36.00	4.0	12	3	.02
GP 7	36.00	+ .1— .4	11	22	.01
GP 8	36.00	+ .1— .9	11	11	.01
GP 9	36.00	+ .5—1.0	11	7.3	.01
GP10	36.00	+ .1—1.4	11	7.3	.01
GP11	36.00	+ .5—1.5	11	5.5	.01
GP12	36.00	+1.0—2.0	12	4	.02
GP13	36.00	+1.0—3.0	12	3	.02

½ to 2 in. **Range**—Housing 17¼x5¼x2⅝ in. over all; wt. each 9$\frac{3}{16}$ lbs.

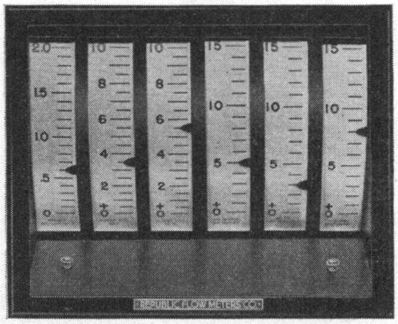
3 to 4 in. **Range**—Housing 17⅝x9⅜x2½ in. over all; wt. each 14¼ lbs.

One in a box.

Note—Meriam two-tube and three-tube draft gauges also available as well as special range combinations.

DRAFT AND PRESSURE INDICATORS

REPUBLIC



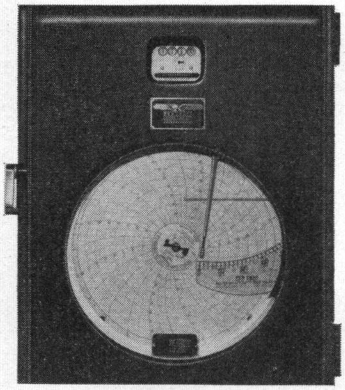
Diaphragm Actuated—Any Number and Combination

Indicating units are interchangeable and are operated by a dry-bellows type of diaphragm. The 12 in. vertical, translucent scales are illuminated from the rear. All adjustments are made from the front of the panel and each unit may be withdrawn without disturbing others.

The Republic multi-point gauge can also be made to indicate quantities such as flow, CO_2, temperature, liquid level, etc.

BOILER METERS

REPUBLIC



Record Steam Flow, Air Flow, Flue Gas Temperature

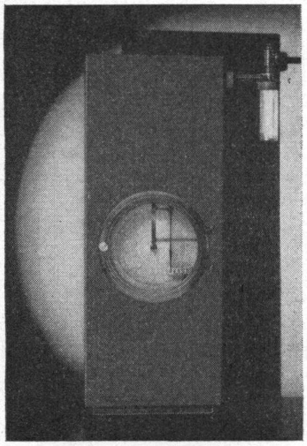
The Republic Boiler Meter consists of an electric recording and integrating steam flow meter combined with an oil-sealed bell type recording air flow element. The single bell is completely enclosed, and has only the differential air pressure applied to it.

An adjustable cam mechanism, easily accessible, permits such a calibration that the steam flow and airflow pens are together when the proper amount of air is being supplied to the furnace for maximum combustion efficiency.

A third pen, recording flue gas temperature (or steam pressure) can be added. Where desired, a detached dial type steam flow indicator can also be supplied.

CO_2 METERS

REPUBLIC



An Automatic Orsat—For Checking Combustion Efficiency

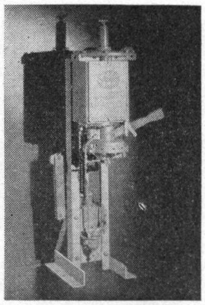
For every fuel and boiler, there is a definite percentage of CO_2 in the flue gas that will assure highest combustion efficiency. Less than this amount indicates an excess of combustion air, causing high stack loss.

The Republic motor-driven CO_2 meter is available with either mechanical indicator and recorder or with detached electrically operated remote reading instruments. It registers a continuous pen line record of per cent CO_2 in the flue gas, measured by the accurate and dependable Orsat method (volumetric absorption). It is an automatic Orsat built for continuous service under the most severe boiler room demands.

If desired, two additional records may be placed on the same chart. These records may be any combination of draft, temperature or flow measurement.

REGULATORS

REPUBLIC



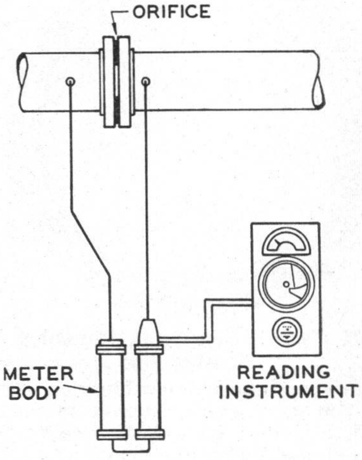
Republic Regulators, either oil-or air-operated, are available for pressure and draft control, flow control, speed and level control, also proportioning.

Used for combustion control, feed water regulation, desuper-heating and pressure reducing systems.

Special catalogs are available on request.

FLOW METERS

REPUBLIC



Electrical Remote Reading Type

Available for measuring the flow of all types of liquids and gases. Meter bodies are built for metering fluids at line pressures up to 10,000 lb. per sq. in. and for all ranges of differential pressure. The reading instruments—indicator, recorder and integrator—are of the remote reading type and can be located any distance from the point of flow measurement.

The meter is composed of three major units, each performing a separate and distinct function and each furnished in a number of types to meet specific installation requirements. The three major units are as follows:

1. The Pressure Differential Device is the unit placed in the line of flow to create a differential pressure which is a measure of the rate of flow of fluid. This unit may be an orifice, a flow nozzle, a pitot tube or a venturi tube.

2. The Meter Body measures the differential head produced by the pressure differential device and transmits this measurement to the reading instruments in terms of a varying electrical resistance.

The body is essentially a mercury U-tube with a scale or resistance element suspended above the mercury. The rise and fall of the mercury varies the resistance of an electrical circuit so that an electric current proportional to the rate of flow of the fluid is produced.

3. The Reading Instruments measure the varying electric current transmitted from the meter body and indicate, record and integrate the measurement directly in terms of units of flow.

Reading instruments include dial type indicators—multi-point indicators—single and multiple pen, round chart recorders—multiple pen, strip chart recorders—and flow integrators.

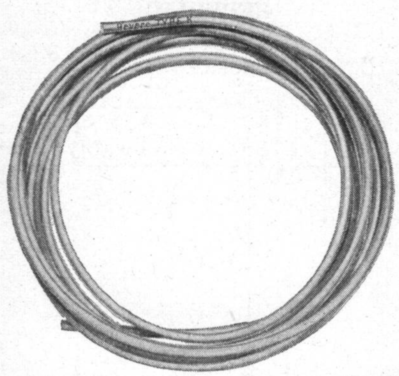
Mechanical Ring Balance Type

Designed for the measurement of steam, water, gas, air or oil at static pressures up to 2500 lb. per sq. in. It is built to operate on differentials as low as 3 in. of water, making it ideal for measurement of low-pressure air or gas. It is ideally suited for installations in which the reading instruments may be located near the point of measurement and remote registration is not required.

Open Channel Type

Built for measuring the flow of liquids in open channels, such as flow of sewage in sewage treatment plants, by measuring the liquid head created by a differential device such as a weir or flume installed in the channel.

COPPER SERVICE PIPE



For Municipal, Industrial, Plumbing and Heating Use

Offers an unusual combination of advantages in strength, facility in making connections and high resistance to both external and internal corrosion.

Satisfactorily meets the demands of every condition of service. Copper pipe installations for water, gas, air, steam and vacuum have been subjected to the severest tests with never a breakdown or evidence of the slightest fault.

Type K—Soft Temper

Has the heaviest wall thickness and is recommended for underground services, general plumbing purposes and heating. Also gas, steam and oil lines.

For operating pressures to 400 lbs.

In 60 ft. coils.

Nominal size, in.	Per foot	Thickness wall, in.	Wt. per foot, lbs.
⅜	$0.28	.049	.269
½	.36	.049	.344
⅝	.42	.049	.418
¾	.60	.065	.641
1	.74	.065	.839
1¼	.92	.065	1.040
1½	1.20	.072	1.360
2	1.78	.083	2.060

Type L—Soft Temper

Has a medium wall thickness. Suitable for normal water conditions and recommended for general inside plumbing service. Also gas, oil and steam lines.

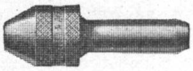
For operating pressures to 150 lbs.

In 60 ft. coils.

Nominal size, in.	Per foot	Thickness wall, in.	Wt. per foot, lbs.
⅜	$0.22	.035	.198
½	.32	.040	.285
⅝	.38	.042	.362
¾	.45	.045	.455
1	.62	.050	.655

FLANGING TOOLS

COPPER PIPE



No. H-18000—Machined Steel, Case Hardened

A specially designed tool with which a perfect flange can be made by simply driving the tool into the end of the service pipe.

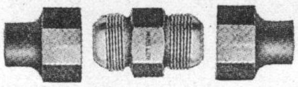
Size, in.	Each	Wt. ea., lbs.
½	$2.50	1.04
¾	2.96	1.82
1	4.00	2.98

All above, open stock.

COPPER SERVICE PIPE FITTINGS

MUELLER

BRASS THREE-PART UNIONS

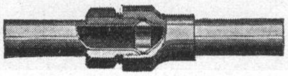


No. H-15400—Copper Pipe to Copper Pipe

Size denotes service pipe size.

Size, in.	Each	Wt. each, lbs.	Size, in.	Each	Wt. each, lbs.
½	$1.50	.45	1¼	$ 5.80	2.26
¾	1.80	.60	1½	7.90	3.65
1	2.95	1.23	2	13.50	7.11

BRASS TWO-PART UNIONS

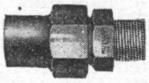


No. H-15405—Copper Pipe to Copper Pipe

Size denotes service pipe size.

Size, in.	Each	Wt. each, lbs.	Size, in.	Each	Wt. each, lbs.
½	$1.15	.40	1¼	$ 4.40	2.11
¾	1.44	.55	1½	$ 6.00	3.40
1	2.25	1.12	2	10.25	6.74

BRASS COUPLINGS

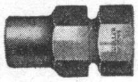


No. H-15425—Copper to Outside Iron Pipe

Size denotes service pipe size, also IP size.

Size, in.	Each	Wt. each, lbs.	Size, in.	Each	Wt. each, lbs.
½	$1.05	.46	1¼	$4.00	2.30
¾	1.30	.61	1½	5.45	3.30
1	2.05	1.28	2	9.30	6.66

BRASS CONNECTIONS

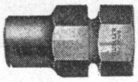


No. H-15450—Copper Pipe to Inside Iron Pipe

May be used to connect to any iron pipe thread and to corporation stops having outlet iron pipe thread same size as stop.

Size denotes IP size inlet also service pipe size outlet.

Size, in.	Each	Wt. each, lbs.	Size, in.	Each	Wt. each, lbs.
½	$1.05	.45	1¼	$4.00	1.90
¾	1.30	.64	1½	5.45	2.89
1	2.05	1.15	2	9.30	5.67



No. H-15480—Copper Pipe to Mueller Thread Inlet

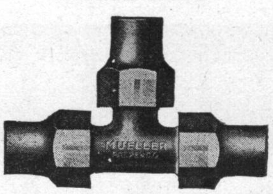
Inlet, Mueller Corporation Stop thread of size denoted.

Outlet, service pipe of size denoted except ⅝ in. which is for ¾ in. pipe.

Size, in.	Each	Wt. each, lbs.	Size, in.	Each	Wt. each, lbs.
½	$1.25	.45	¾	$1.50	.64
⅝	1.50	.53	1	2.45	1.15

All above, open stock.

BRASS TEES

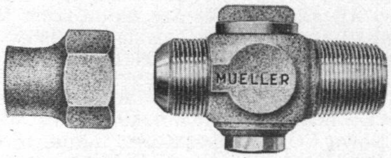


No. H-15380—Straight Sizes, All Copper Pipe to Copper Pipe

Size, in.	Each	Wt. each, lbs.	Size, in.	Each	Wt. each, lbs.
½	$2.45	1.14	1¼	$ 7.75	6.10
¾	2.95	1.66	1½	10.75	9.79
1	4.75	2.88	2	17.65	19.63

Note—Reducing tees furnished on special order direct from factory.

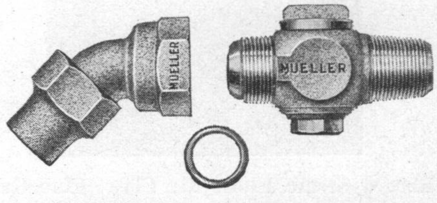
BRASS CORPORATION STOPS



No. H-15000—Mueller Thread Inlet; Compression Outlet, Service Pipe Size

Service pipe same size as Corporation Stop except ⅝ in. size which is for ¾ in. pipe.

Size, in.	With Straight Coupling Nut, each	Without Coupling Nut, each	Wt. each with nut, lbs.
½	$ 1.60	$ 1.35	1.01
⅝	2.25	1.85	1.33
¾	2.85	2.40	1.65
1	4.50	3.75	2.81
1¼	10.00	8.25	5.63
1½	16.00	13.30	8.86
2	26.50	21.75	16.3



No. H-15010—Mueller Thread Inlet; Compression Outlet; Service Pipe Size

⅛ bend coupling and gasket.

Service pipe same size as Corporation Stop except ⅝ in. size which is for ¾ in. pipe.

Size, in.	Complete, each	Wt. each, lbs.	Size, in.	Complete, each	Wt. each, lbs.
½	$2.45	1.51	1¼	$14.10	9.54
⅝	3.40	2.03	1½	23.60	12.36
¾	4.15	2.30	2	37.00	21.79
1	6.45	3.79			

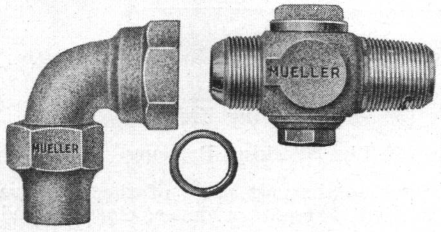
No. H-15063—⅛ Bend Coupling and Gasket Only

Size, in.	Each	Size, in.	Each
½	$1.20	1¼	$ 5.80
⅝	1.60	1½	9.95
¾	1.70	2	14.50

All above, open stock.

COPPER SERVICE PIPE FITTINGS

MUELLER CORPORATION STOPS



No. H-15020—Mueller Thread Inlet; Compression Outlet, Service Pipe Size

¼ hand coupling and gasket.

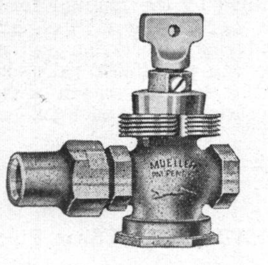
Service pipe same size as Corporation Stop except ⅝ in. size which is for ¾ in. pipe.

Size, in.	Complete, each	Wt. each, lbs.	Size, in.	Complete, each	Wt. each, lbs.
½	$2.25	1.62	1¼	$14.70	9.82
⅝	3.60	2.18	1½	24.65	13.12
¾	4.35	2.44	2	38.55	23.24
1	6.75	3.95			

No. H-15068—¼ Bend Coupling and Gasket Only

Size, in.	Each	Size, in.	Each
½	$1.30	1¼	$6.45
⅝	1.80	1½	11.00
¾	1.90	2	16.05
1	2.95		

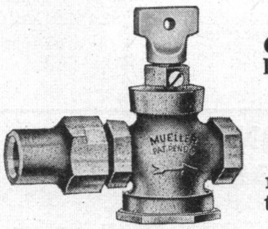
BRASS CURB STOPS



No. H-15125—Minneapolis Pattern, Compression Inlet, Service Pipe Size; Female Iron Pipe Thread Outlet

Inverted key, round way, Minneapolis top.

Size, in.	Each	Minneapolis top, in.	Wt. each, lbs.
½	$ 4.15	1½	2.28
¾	6.75	1½	3.40
1	10.05	2	5.24
1¼	16.55	2½	8.53
1½	25.95	3	13.70
2	42.75	3½	22.63



No. H-15175—Compression Inlet, Service Pipe Size; Female Iron Pipe Thread Outlet

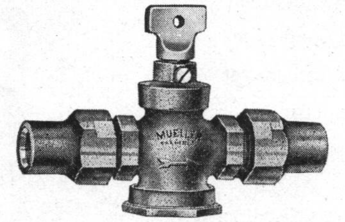
Inverted key, round way, plain top.

Size, in.	Each	Wt. each, lbs.	Size, in.	Each	Wt. each, lbs.
½	$3.75	2.07	1¼	$15.55	7.78
¾	6.25	3.15	1½	24.45	12.43
1	9.40	4.91	2	40.25	20.80

All above, open stock.

COPPER SERVICE PIPE FITTINGS

MUELLER BRASS CURB STOPS



No. H-15200—Compression Inlet and Outlet, Service Pipe Size

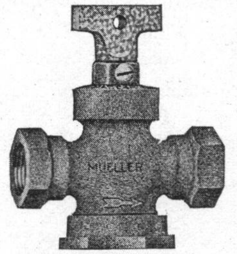
Inverted key, round way, plain top.

Size, in.	Each	Wt. each, lbs.	Size, in.	Each	Wt. each, lbs.
½	$ 4.55	2.41	1¼	$19.05	8.82
¾	7.60	3.58	1½	29.45	13.58
1	11.40	5.67	2	47.50	23.85

Open stock.

CURB STOPS

MUELLER BRASS, GROUND KEY



No. H-10201—Inverted Key, Round Way, Female Iron Pipe Threads

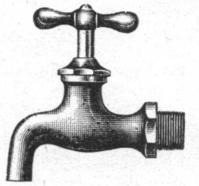
By-pass is on the inlet end and stops must be installed as indicated by the arrow on the body.

Size, in.	Each	Wt. each, lbs.	Size, in.	Each	Wt. each, lbs.
½	$2.95	1.88	1¼	$12.05	6.22
⅝	3.80	2.09	1½	19.45	9.70
¾	4.90	2.68	2	33.00	15.77
1	7.40	4.02			

Open stock.

SINK FAUCETS

COMPRESSION

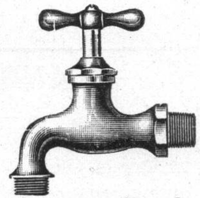


No. 7000-R—Plain Bibb

All brass, metal tee handle, male iron pipe head; with hexagon shoulder.

Size, in.	Rough Brass, each	Polished Brass, each	Wt. each, lbs.
½	$1.06	$1.54	1
¾	1.13	1.74	1¼
1	3.11	4.03	1½

Six in a box.



No. 7001-R—Hose Bibb

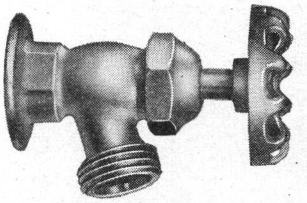
All brass, metal tee handle, male iron pipe thread; with hexagon shoulder.

Size, in.	Rough Brass, each	Polished Brass, each	Wt. each, lbs.
½	$1.12	$1.60	1
¾	1.20	1.80	1¼
1	3.60	4.60	1½

Six in a box.

LAWN FAUCETS

COMPRESSION SILL COCKS



No. 2524—Rough Brass

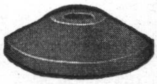
Wheel handle, female iron pipe thread; hose thread on nozzle.

Size, in.	Each	Wt. each, lbs.
⅛	$1.05	$\frac{15}{16}$
¾	1.05	1

Six in a box.

FAUCET WASHERS

BEVELED



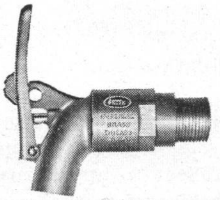
Tough Black Rubber Compound, for Hot or Cold Water

Trade size, in.	Per 100	Actual outside diam., in.	Wt. per 100, oz.
¼ small	$2.40	½	3¾
¼ regular	2.40	$\frac{9}{16}$	4
¼ large	2.40	$\frac{19}{32}$	4½
⅜ regular	2.80	⅝	5
⅜ large	2.80	$\frac{11}{16}$	5½
½ regular	2.80	¾	7
⅝ regular	3.50	$\frac{13}{16}$	7½

100 in a box.

LOCK LEVER FAUCETS

SETTE



Self-Closing

Metal-to-metal seat; has no leather, rubber, fiber or composition washers to cause leaks by getting worn or injured.

Holds hot or cold liquids, oil, gasoline, kerosene, alcohol, light varnishes, clear lacquers, thinners, solvents of all kinds, antifreeze solutions, etc.

Automatically self-closing; cannot be left open by accident. Push lever control; easily locked in open or closed position.

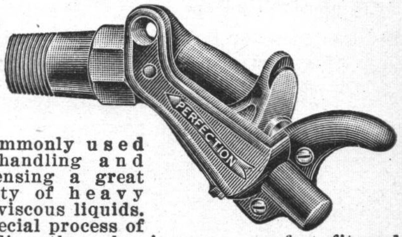
Polished Brass

	Each
No. G-261—¾ in. male iron pipe thread; wt. each ¾ lb.	$1.30

Twelve in a box.

OIL AND MOLASSES GATES

PERFECTION



Commonly used for handling and dispensing a great variety of heavy and viscous liquids. A special process of grinding the valve insures a perfect fit and prevents leaking. Subjected to a hydraulic test; will not leak.

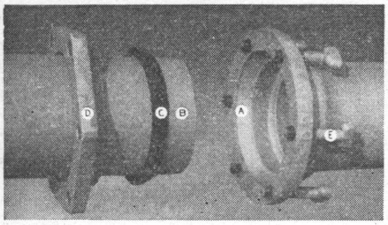
Straight shank iron pipe thread.

Japanned Cast Iron

Nos.	Per dozen	Thread, in.	Padlock eye, in.	No. in box	Wt. box, lbs.
71	$21.50	¾	$\frac{9}{32}$	6	10
72	22.10	1	$\frac{9}{32}$	6	12½
73	27.00	1¼	⅜	1	3¾
74	29.30	1½	⅜	1	4¼
75	39.50	2	⅜	1	5½

CAST IRON WATER PIPE

MONO-CAST DOUBLEX SIMPLEX



(A) Socket end of pipe

(B) Spigot end of pipe

(C) Endless ring gasket

(D) Cast iron gland

(E) High strength cast iron bolts

Mono-cast Doublex Simplex pipe is regular centrifugal pipe equipped with the standard mechanical joint for cast iron pipe. The joint is designed with a stuffing box into which an endless ring gasket is compressed by a cast iron ring. It allows a deflection of 2½ degrees as well as expansion and contraction of line without leakage.

The extra cost of the pipe per foot is less than it costs to buy lead and jute, pay a caulker and his helper, and for digging a larger trench and bell holes large enough to caulk in. This mechanical joint can be assembled over the trench with common labor and a wrench.

Doublex Simplex pipe, including all jointing materials is only slightly higher than Bell and Spigot pipe (which includes no jointing materials) as indicated below.

For Doublex Simplex Pipe Add to Price of Bell and Spigot Pipe

Size, in.	4	6	8	10	12
Add per foot	$0.10	.15	.20	.25	.30

Size, in.	14	16	18	20
Add per foot	$0.35	.40	.45	.50

Price includes all jointing material.

All Doublex Simplex Joint Fittings are made to the short body standard. This savings in weight as compared with AWWA long body standard is sufficient to approximately pay for this joint and jointing materials. Therefore the cost of these fittings is approximately the same as the standard AWWA bell and spigot fittings.

Doublex Simplex Joint Pipe can be connected with existing bell and spigot fittings as the plain spigot end can be calked into a standard bell.

"ENAMELINE"

"Enameline" is a trade name for cement lining in cast iron pipe.

Cement lining prevents tuberculation incrustation, oxidation, and rusty water in cast iron pipe. Because of this protection the flow of water remains high throughout the life of the pipe.

It is not necessary to put in oversize pipe to take care of loss of capacity and flow in future years.

Thickness of lining is as follows:

Pipe, in.	Lining, in.
3 to 12	$\frac{1}{16}$
14 to 24	$\frac{3}{32}$

Plus tolerance $\frac{1}{16}$ in.

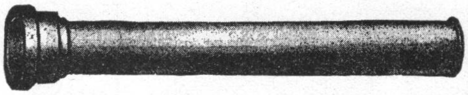
Minus tolerance 0 in.

We can furnish this "Enamel" lining at no extra charge.

The best specifications for Water Distribution Pipe, in the world today, is **A.S.A. Doublex Simplex Mechanical Joint Centrifugal Mono-Cast, Cast Iron Pipe, Enamelined.**

CAST IRON WATER PIPE

MONO-CAST (CENTRIFUGAL) BELL AND SPIGOT



Class 150, for 150 Lbs. Working Pressure

Class 250, for 250 Lbs. Working Pressure

Cast in a sand-lined flask so that all parts of the pipe are formed simultaneously on sand. Presents a dense, close-grained fracture.

Conforms to Federal Specifications WW-P-421 and to A.S.A. specifications.

American Standards Association (A.S.A. 21/45) Cast Iron Pipe

Based on the engineering data contained in the specifications, A.S.A. pipe is superior to WW-P-421. Many more factors such as truck loadings, depth of trench and the tensile strength of the iron are taken into consideration so that A.S.A. pipe will meet all conditions without buying and burying excess iron that serves no useful purpose as a water conductor.

16 Foot Lengths

Nominal inside diam., in.	Actual outside diam., in.	Class 150		Class 250	
		Thick-ness, in.	Wt. per ft. includ. bell, lbs.	Thick-ness, in.	Wt. per ft. includ. bell, lbs.
4	4.80	.32	15.2	.32	15.2
6	6.90	.32	22.2	.32	22.2
8	9.05	.38	34.9	.38	34.9
10	11.10	.41	45.5	.44	48.9
12	13.20	.41	54.2	.48	63.5

Metal thicknesses are determined by the Manual for the Computation of Strength and Thickness of Cast Iron Pipe (A21.1-1939) approved by the American Standards Association and are based on 21,000 psi bursting tensile strength and 45,000 psi ring modulus of rupture for pipe laid in a flat bottom trench with tamped backfill and 5 ft. of cover, except sizes 4, 6 and 8 in. based on 8 ft. of cover.

Thicknesses for other trench conditions or metal of higher strength will be furnished on request.

Federal Specification WW-P-421 Cast Iron Pipe

16 Foot Lengths

Nominal inside diam., in.	Actual outside diam., in.	Class 150		Class 250	
		Thick-ness, in.	Wt. per ft. includ. bell, lbs.	Thick-ness, in.	Wt. per ft. includ. bell, lbs.
4	4.80	.34	16.1	.38	18.1
6	6.90	.37	25.7	.43	28.7
8	9.05	.42	38.6	.50	44.6
10	11.10	.47	52.2	.57	62.3
12	13.20	.50	66.1	.62	81.1
14	15.30	.55	86.9	.69	108.0
16	17.40	.60	108.1	.75	133.6
18	19.50	.65	130.4	.83	164.9
20	21.60	.68	152.0	.88	193.6

Metal thicknesses conform to Federal Specification WW-P-421 for water and are the same as for corresponding classes bell and spigot pipe for water.

FLANGED CAST IRON WATER PIPE FITTINGS

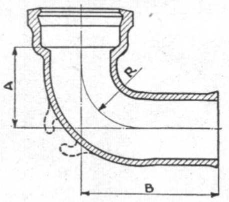
Any of the AWWA Water Works fittings listed on the following page with Bell and Spigot ends can be furnished with American Standard flanged ends, faced and drilled, and are an adaptation of the American Water Works Association standard Bell and Spigot specifications.

Complete Information and Prices on Request

CAST IRON WATER PIPE FITTINGS

BELL AND SPIGOT
Class D, AWWA Standard

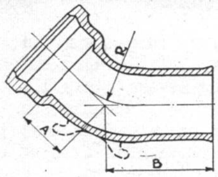
ONE-FOURTH CURVES



Weight Each in Pounds

Size, in.	1 Bell	Size, in.	1 Bell
4	82	14	504
6	130	16	750
8	200	18	888
10	278	20	1070
12	366		

ONE-EIGHTH CURVES



Weight Each in Pounds

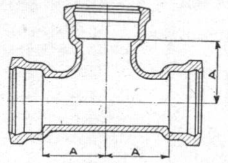
Size, in.	1 Bell	Size, in.	1 Bell
4	66	14	442
6	105	16	558
8	150	18	663
10	202	20	964
12	265		

ONE-SIXTEENTH CURVES

Weight Each in Pounds

Size, in.	1 Bell	Size, in.	1 Bell
4	66	14	382
6	105	16	484
8	150	18	574
10	202	20	858
12	265		

STRAIGHT TEES



Weight Each in Pounds

Size, in.	3 Bells	Size, in.	3 Bells
4	128	14	724
6	200	16	969
8	294	18	1144
10	395	20	1438
12	512		

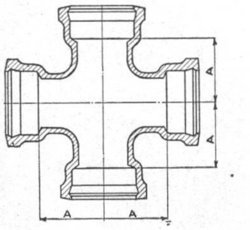
REDUCING TEES

Weight Each in Pounds

Size, in.	3 Bells	Size, in.	3 Bells
6x 6x4	183	12x12x10	491
8x 8x6	270	12x12x 8	474
8x 8x4	255	12x12x 6	458
10x10x8	371	12x12x 4	445
10x10x6	351	16x16x12	861
10x10x4	338		

All above, open stock.

STRAIGHT CROSSES



Weight Each in Pounds

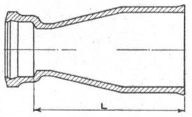
Size, in.	4 Bells	Size, in.	4 Bells
4	166	14	963
6	257	16	1259
8	372	18	1454
10	493	20	1828
12	623		

REDUCING CROSSES

Weight Each in Pounds

Size, in.	4 Bells	Size, in.	4 Bells
6x 6x4x4	221	10x10x 4x 4	.377
8x 8x6x6	325	12x12x10x10	.577
8x 8x4x4	294	12x12x 8x 8	.545
10x10x8x8	443	12x12x 6x 6	.512
10x10x6x6	406	12x12x 4x 4	.486

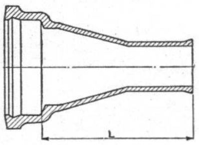
REDUCERS



Small End Bell

Size, in.	Wt. each, lbs.	Size, in.	Wt. each, lbs.
6x 4	97	14x 6	256
8x 6	143	16x14	461
8x 4	119	16x12	405
10x 8	198	16x10	364
10x 6	169	18x16	569
10x 4	146	18x14	502
12x10	261	18x12	446
12x 8	231	18x10	405
12x 6	202	20x18	776
12x 4	179	20x16	711
14x12	360	20x14	638
14x10	320	20x12	576
14x 8	288		

INCREASERS

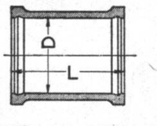


Large End Bell

Size, in.	Wt. each, lbs.	Size, in.	Wt. each, lbs.
4x 6	104	6x12	218
4x 8	132	8x10	201
4x10	162	8x12	240
6x 8	150	10x12	267
6x10	180	12x14	378

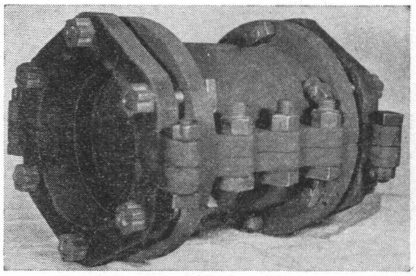
All above, open stock.

SOLID SLEEVES



Size, in.	Lgth., in.	Wt. each, lbs.	Size, in.	Lgth., in.	Wt. each, lbs.
4	15	61	14	18	249
6	15	87	16	24	443
8	15	119	18	24	518
10	18	176	20	24	625
12	18	223			

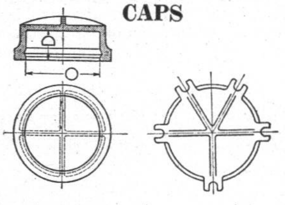
DOUBLEY SIMPLEX SPLIT SLEEVES



This sleeve makes a quick, effective repair to a broken main. It is easily applied by unskilled labor. Makes a bottletight repair without calking. A wrench is the only tool needed. It is furnished complete with all necessary joint material—such as gaskets and bolts.

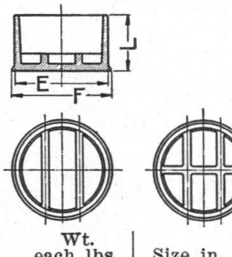
Size, in.	Lgth., in.	No. of bolts	Size bolts, in.	Wt. each, lbs.
4	10	6	¾	44
6	10	6	¾	60
8	10	6	¾	88
10	10	6	¾	110
12	6	6	¾	140
14	8	8	1	266
16	8	8	1	303
18	8	8	1	346
20	8	8	1	388

CAPS



Size, in.	Wt. each, lbs.	Size, in.	Wt. each, lbs.
4	27	14	183
6	40	16	251
8	59	18	305
10	84	20	370
12	142		

PLUGS



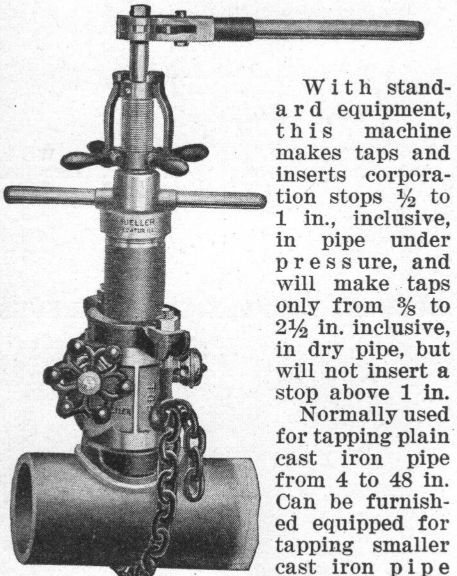
Size, in.	Wt. each, lbs.	Size, in.	Wt. each, lbs.
4	8	14	65
6	14	16	96
8	24	18	121
10	38	20	156
12	50		

All above, open stock.

All Above, Prices on Request

WATER TAPPING MACHINES

MUELLER TYPE "B"



With standard equipment, this machine makes taps and inserts corporation stops ½ to 1 in., inclusive, in pipe under pressure, and will make taps only from ⅜ to 2½ in. inclusive, in dry pipe, but will not insert a stop above 1 in.

Normally used for tapping plain cast iron pipe from 4 to 48 in. Can be furnished equipped for tapping smaller cast iron pipe and steel pipe as small as 1½ in. at an extra cost.

Standard Equipment

Ratchet handle, combined feed nut and yoke; combined drills and taps with Mueller thread; ½, ⅝, ¾ and 1 in. screw plugs with outside Mueller thread; ½, ⅝, ¾ and 1 in. iron saddles for 4, 6, 8 and 10 in. C.I. pipe. Large rubber gasket for all sizes of cast or wrought iron pipe; small rubber gasket for top of saddle. Round link chain with eyebolt and hook for pipe up to 12 in. Chain wrench; body cleaning chisel; lubricating oil and cutting grease.

Optional Equipment

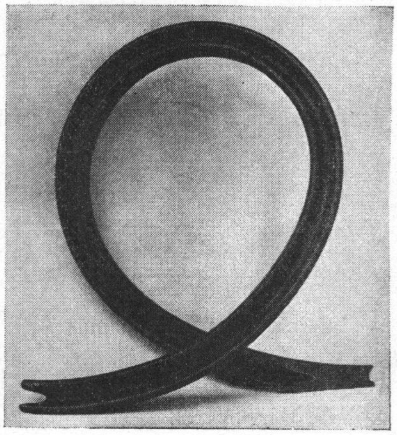
Combined drills and taps with iron pipe thread instead of Mueller thread; four iron saddles of any size up to 48 in. in place of 4, 6, 8 and 10 in. saddles. Also inside thread screw plugs with Mueller thread, copper pipe connection thread or I.P. thread instead of outside thread screw plugs furnished without additional charge.

	Each
Type "B"—Shipping wt. each 120 lbs.	$222.50

One in a wood box.

PIPE CAULKING MATERIALS

"BOND-O" RUBBER GASKETS



For Packing Cast Iron Pipe Joints

Made of flexible resilient rubber. Each size fits any class of pipe. Cannot harbor nor breed bacteria. Quickest and simplest to install on new or maintenance work. Scarf joint calks easily in place. Dams all water from leaking valves.

Prevents all rotting and related undesirable bacterial growth commonly associated with hemp or jute packing. The procedure for installing "Bond-O" gaskets or braided jute is nearly identical. Due to the resiliency of the flexible rubber and the caulking groove, much time is saved in caulking.

For pipe, in.	Each	Wt. carton, lbs.
4	$0.22	16
6	.26	22
8	.30	28
10	.35	34
12	.40	38

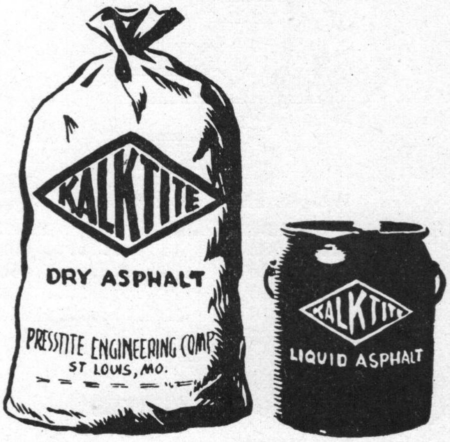
Fifty in a carton.

Note—Larger sizes up to 60 in. available.

NOTE

See following page for quantity of various caulking materials required for each size pipe joint.

KALKTITE FOR VITRIFIED AND CEMENT SEWER PIPE; PARTICULARLY RECOMMENDED FOR USE IN WET TRENCHES

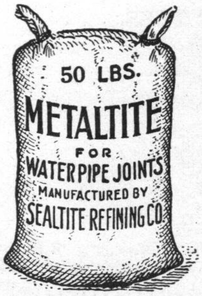


An asphaltic compound that will insure satisfactory, flexible, economical, acid and root resisting sewer joints. Kalktite is used cold. It is easy to handle; any competent worker can make satisfactory joints. It is not soluble in water and will not wash away. It will harden under water as well as in the open air and is especially desirable for wet trenches.

Kalktite is furnished as a unit consisting of two elements, Kalktite dry asphalt and Kalktite liquid asphalt. These are furnished in the proper proportions to form Kalktite upon mixing.

	Per 100 lbs.
125 lb. Unit—One 97 lb. bag dry Kalktite and one 28 lb. drum liquid Kalktite	$13.50
2000 lb. Unit—Sixteen 97 lb. bags dry Kalktite; one 410 lb. drum and one 38 lb. drum liquid Kalktite	12.00

METALTITE FOR CAST IRON WATER MAINS



Used with Dry Square Braided Jute

A sulphur compound that is used as a substitute for lead at a great material savings; one pound of Metaltite is equal to 4 pounds of lead.

Ordinary workmen can make joints that are tight from the start. However, joints showing initial seepage will take up and become bottle tight. They will also stand any pressure the pipe will stand.

Metaltite is melted over a small fire, care being taken to prevent overheating otherwise the sulphur will ignite. It is then poured through a funnel directly into the joint. It requires no caulking and bell holes only large enough for yarning are required; consequently more pipe can be laid each day.

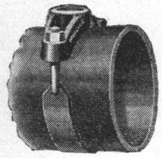
For best results use paper funnels and wood plugs which are provided at a nominal cost.

	Per 100 lbs.
Metaltite—In bars or pigs	$15.00

Fifty pounds in a cloth bag.

PIPE SADDLES

MUELLER SINGLE STRAP SERVICE CLAMPS



Malleable Iron, Galvanized; Black Strap

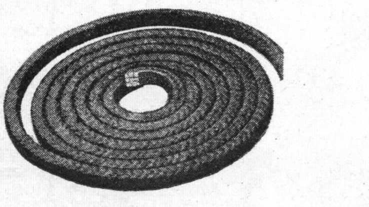
Complete with patented lead gasket.

Note—In ordering, specify whether iron pipe threads or Mueller corporation stop threads are desired.

Nos.	Kind and size of pipe, in. Wrought Iron	Range OD Casing	Cast Iron	Prices each Size tappings, in. ½&¾	1	1¼	1½	2	Av. wt. each, lbs.
H-10457	4	4¼ to 4½	..	$1.82	$1.90	$1.96	$2.04	$2.18	6½
H-10458	4½	4¾ to 5	4	1.90	1.96	2.04	2.20	2.24	7
H-10459	5	5¼ to 5$\frac{9}{16}$	..	2.04	2.10	2.18	2.24	2.38	8
H-10460	....	5¾ to 6	5	2.10	2.18	2.24	2.32	2.46	8
H-10461	6	6⅜ to 6⅝	..	2.32	2.38	2.46	2.52	2.66	8
H-10462	....	6¾ to 7	6	2.52	2.60	2.66	2.74	2.88	8
H-10463	7	7⅜ to 7⅝	..	2.60	2.66	2.74	2.80	2.94	8½
H-10464	....	7¾ to 8	..	3.02	3.08	3.16	3.22	3.36	8½
H-10465	8	8⅜ to 8⅝	..	3.08	3.16	3.22	3.30	3.44	9
H-10466	....	8¾ to 9	8	3.22	3.30	3.36	3.44	3.58	9
H-10467	....	9¾ to 10	..	3.64	3.72	3.78	3.86	4.00	9½
H-10468	10	10⅜ to 10¾	..	4.34	4.42	4.48	4.56	4.70	10
H-10469	....	10¾ to 11⅛	10	4.56	4.62	4.70	4.76	4.90	10½
H-10470	....	11⅝ to 12	..	4.76	4.84	4.90	4.98	5.12	11
H-10471	12	12⅜ to 12¾	..	5.26	5.32	5.40	5.46	5.60	12

PIPE CAULKING MATERIALS

JUTE PACKING SQUARE BRAIDED



Dry

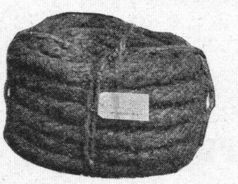
Generally used in connection with sulphur compounds (lead substitute) in caulking cast iron water mains.

Per 100 lbs.

½ in. square—15 ft. to the pound ..**$94.50**

Fifty pounds on a reel.

ROPE OAKUM, TWISTED JUTE



Untarred, Lightly Oiled

Generally used with pig lead in caulking cast iron water mains.

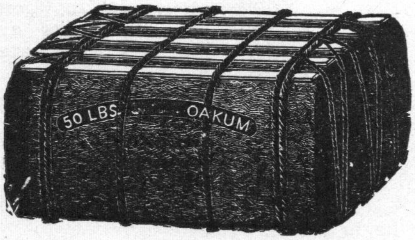
Handier in form than spun oakum; more compressed and can be made into a tighter joint.

Per 100 lbs.

8 Strand—Diam. of rope approximately 1½ in. **$38.70**

Fifty pounds in a bale.

SPUN OAKUM



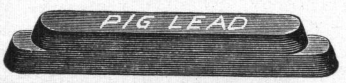
Tarred

Made from carefully prepared jute and treated with high quality tar. It is spun in a smooth, even sliver.

Per 100 lbs.

50 lb. Slotted bale **$37.80**

PIG LEAD



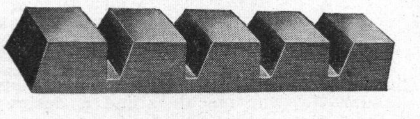
Made of pure virgin lead.

For caulking joints on cast iron water and soil pipe.

Per pound

100 lb. pigs ....**$ Market Price**

INGOT LEAD



$2.00 per 100 lbs. advance over pig lead price.

Each section is easily detached from the others and fits the usual melting pot.

Per pound

Ingot Lead—5 lb. sectional ingots, 5 ingots in a pig .....**$ Market Price**

25 pounds in a box.

PIPE CAULKING MATERIALS

Quantity of Various Materials Required For Cast Iron Pipe Joints

Size pipe, in.	Rope Oakum, lbs.	Braided Jute, lbs.
4	.21	.10
6	.31	.13
8	.44	.17
10	.53	.20
12	.61	.24
14	.81	.27
16	.94	.45
18	1.00	.51
20	1.25	.57

Size pipe, in.	Pig lead, lbs.	Sulphur compound, lbs.	*Kalktite, lbs.
4	7.50	2.00	.40
6	10.25	3.00	.80
8	13.25	4.00	1.60
10	16.00	5.00	2.13
12	19.00	6.00	2.55
14	22.00	7.00	2.98
16	30.00	8.50	3.72
18	33.80	9.50	4.52
20	37.00	10.50	5.71

*Kalktite is used on vitrified and concrete sewer pipe.

These figures are from actual measurement but allowance must be made for variance in outside diameter of cast iron pipe and to allow sufficient lap off center. Usually, 10 per cent is sufficient.

YARNING IRONS

WATER MAIN

No. H-10691—Concave Pattern

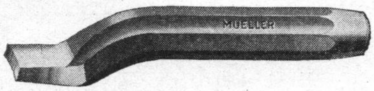
High grade octagon tool steel.

Size Nos.	**1**	**2**
Thickness point, in.	1/16	⅛
Width point, in.	1	1
Length point, in.	3¾	3¾
Size steel, in.	⅞	⅞
Length, in.	10¾	10¾
Wt. each, lbs.	1⅘	1⅘
Each	$4.32	4.32

Open stock.

CAULKING IRONS

WATER MAIN



No. H-10686—Concave Pattern

High grade octagon tool steel.

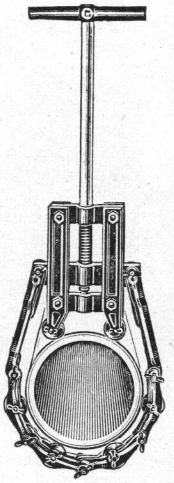
Approximate length over all 6¾ in., length of point 1 in., width of point 1 in., ⅞ in. steel.

Size Nos.	**1**	**2**	**3**
Thickness point, in.	⅛	3/16	¼
Wt. each, lbs.	1¼	1⅓	1⅓
Each	$3.24	3.24	3.24

Open stock.

CAST IRON PIPE CUTTERS

ELLIS



Highest Quality Cutter Wheels

Drop forged frame and links.

Cuts can be made in the trench and in tight corners. Every point in contact with the pipe is a cutting disc; and the tool needs only to be moved in a single arc in order to cut entirely around the pipe.

Makes clean cuts without danger of breaking pipe.

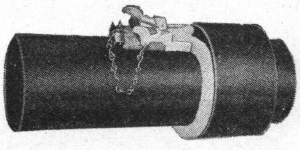
Nos.	Each	Cap., in.	Wt. each, lbs.
01	$55.00	4- 8	50
1	70.00	4-12	55

Extra Parts

	Each
Cutter Wheels	$0.85
Short Curved Link—Complete; wt. each 2 lbs.	7.50
Female Long Link—Wt. each 2 lbs.	6.00
Male Long Link—Wt. each 2 lbs.	6.00
Wheel Pin—Wt. each 2 oz.	.20
Thumb Bolt and Nut—Wt. each 4 oz.	.50
Handle—Wt. each 2½ lbs.	1.50

JOINT RUNNERS

BERNZ

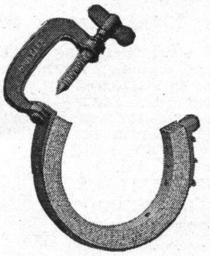


Spring Clamp Type

Made of finest asbestos; with two woven jackets and an asbestos core. Malleable iron clamps assure long life.

Nos.	**109-B**	**109-C**	**109-D**
Size	2	3	4
For pipe, in.	4, 5, 6	6, 8, 10	10, 12, 14
Packing, in.	¾	1	1
Wt. each, lbs.	1⅜	2¾	3¼
Each	$1.80	3.15	3.70

MUELLER PIPE JOINTER



No. H-10728

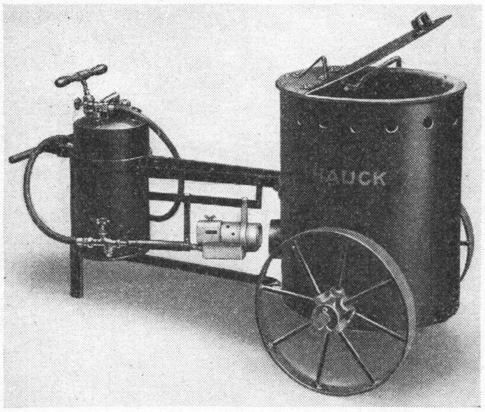
Made of a special packing with a brass band riveted on the outside to which the clamp is securely riveted.

For pipe, in.	Each	Wt. each, lbs.
2	$ 3.20	1⅘
4	5.02	1⅘
6	6.40	2⅘
8	7.74	3⅓
10	9.38	4⅓
12	10.48	4¾
14	11.70	5½
16	12.72	5¾
18	13.60	6¼
20	14.42	6¾
24	17.40	10½

All above, open stock.

COMPOUND MELTING FURNACES

HAUCK



Burns Kerosene, Light Furnace Oil or Bottled Gas

Melts all bituminous compounds, sulphur compounds, gas main protective coating enamels, etc., a potful to pouring temperature in 18 minutes.

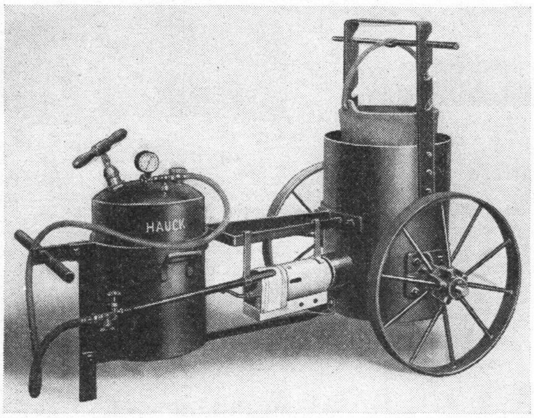
The quantity of heat is instantly regulated by moving burner forward or backward on the slide rail. Burner gives a smokeless flame of 1800 to 2000 deg. F. Can be used indoors or out.

Heavy sheet steel furnace; 18x2 in. roller bearing wheels; heavy steel melting pot; hand pump built into tank.

	Each
No. 331—25 gal. cap. melting pot, 3x28 in. flame burns 1½ gal. per hour; wt. each 445 lbs.	$110.00
No. 331-BG—With high pressure inspirator type horizontal flame bottled gas burner with retain-a-flame nozzle, valve pressure gauge, 10 ft. of gas hose and frame to carry 100 lb. gas cylinder; wt. each 430 lbs.	92.00

MELTING FURNACES AND TORCHES

HAUCK COMBINATION



Burns Kerosene, Light Furnace Oil or Bottled Gas

Consists of all-welded steel fuel tank with hand pump; 12 ft. of oil resisting hose with brass unions; burner with needle oil valve; oil strainer and union. Burner not affected by wind or cold weather. Furnace made of heavy sheet steel with 24x2½ in. roller bearing steel wheels. Furnished with pot rack and bar; cast iron pot.

Melts 450 lbs. babbitt in 18 minutes or 450 lbs. lead in 20 minutes.

Nos.	**200**	**201**
Cap. fuel tank, gals.	10	12
Burns gals. per hour	½	2
Pot capacity, lbs.	200	450
Ship. wt. each, lbs.	355	390
Each	$143.00	159.00

For Bottled Gas

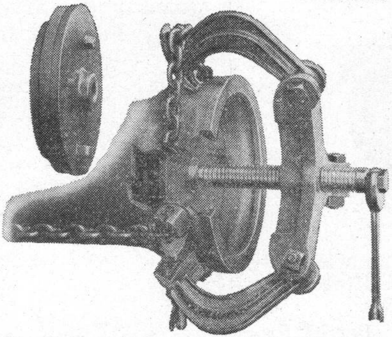
Equipped with high pressure inspirator type horizontal flame bottled gas burner with retain-a-flame nozzle, valve, pressure gauge, 10 ft. gas hose, and steel frame for carrying 100 lb. gas bottles.

Nos.	**200-BG**	**201-BG**
Pot capacity, lbs.	200	450
Wt. each, lbs.	340	370
Each	$120.00	126.00

All above, open stock.

PIPE CLAMPS AND PLUGS

ELLIS



For use in testing, and in temporarily closing mains, or for any emergency where it is necessary to plug the pipe for a short time. Clamp can remain on as long as desired.

Will hold pressure up to 300 lbs.

The large plugs are tapped for ½ in. pipe plug to allow escape of air, for releasing water or for connecting gauge.

All plugs to a set may not be needed; they are therefore listed separately.

	Per set
No. 1-A—With arms, chain, screw and wrench; for 4, 6, 8, 10 and 12 in. pipe; without plugs; shipping wt. per set 53 lbs.	$60.00

One in a box.

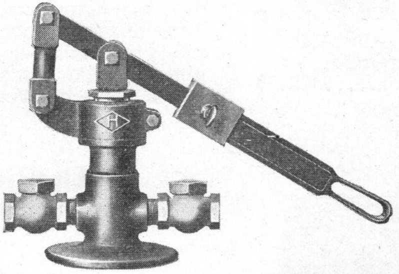
Plugs Only, With Gaskets

For pipe, in.	4	6	8	10	12
Wt. each, lbs.	5½	10½	15½	27	38
Each	$3.00	4.75	6.50	9.75	13.00

Open stock.

PRESSURE OR TEST PUMPS

HYDRAULIC



Single

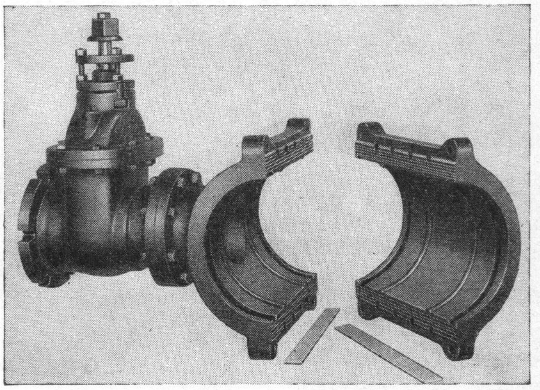
Will generate a cold-water pressure up to 500 lbs. per sq. in. Adapted for testing water lines, testing boilers, cleaning pipes, etc. Has a revolving top permitting its being worked in any position. Sectional levers are adjustable to give greater leverage.

Nos.	Each	Diam. plunger, in.	Suction and discharge, in.	Stroke, in.	Wt. each, lbs.
1	$30.00	1	¾	4	22
2	39.00	1½	1	4	33
3	60.00	1¾	1¼	6	57
4	80.00	2	1½	6	72

One in a box.

TAPPING VALVES AND SLEEVES

RENSSELAER



Used for making branch line connection to main lines under pressure.

Tapping valves are identical in construction with regular No. 13A double disc valves with the exception of the ends and oversize seat rings to permit the use of full size cutters.

The flange on one end is provided with a raised face and drilling to correspond to that of tapping sleeve to insure proper alignment. The flange on the other end is provided with slotted bolt holes to fit all standard tapping machines and is designed for insertion of Class 150 bell end pipe.

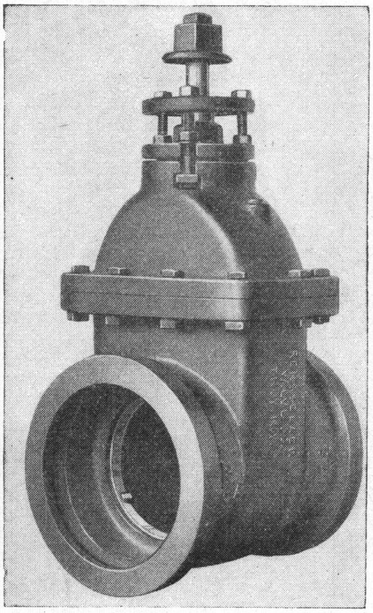
	Pressure Ratings	
Size valve, in.	**2 to 12**	**14 to 48**
Working pressure, lbs.	200	175
Test pressure, lbs.	350	300

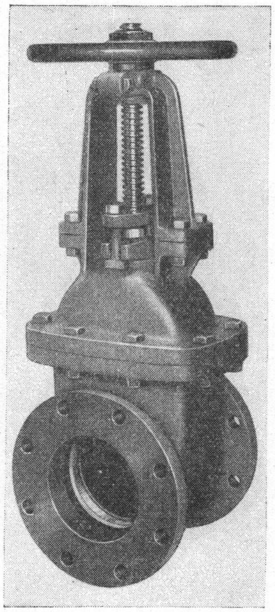
Prices on Request

Note—In ordering, specify size pipe to be tapped and size of tapping valve desired.

GATE VALVES

RENSSELAER AWWA LIST No. 13A, CLASS 150





Iron Body, Bronze Mounted

Double disc, parallel seat.

Pressure Ratings

Size valve, in.	Working pressure, lbs. Non-shock cold water, oil or gas	Working pressure, lbs. Saturated steam	Hydrostatic test pressure, lbs.
2 to 12	200	125	350
14 to 60	175	100	300

Non-Rising Stem

Size valve, in.	Hub Ends, each	Flanged Ends, each	Screwed Ends, each	Average wt. each, lbs.
2	$ 21.75	$ 23.90	$ 22.50	30
2½	.....	38.05	26.60	35
3	28.75	32.50	30.25	65
4	36.55	41.30	39.30	100
5	50.85	55.90	53.05	140
6	58.75	65.10	61.85	190
8	90.80	99.85	99.85	300
10	147.35	160.00	160.00	435
12	193.60	212.30	212.30	600
14	306.60	327.10	......	850
16	408.90	442.25	......	1130
18	555.55	588.85	......	1375
20	683.75	724.65	......	1950
24	1065.80	1133.00	......	2725

Outside Screw and Yoke

Size valve, in.	Hub Ends, each	Flanged Ends, each	Screwed Ends, each	Average wt. each, lbs.
2	$ 29.75	$ 32.65	$ 30.25	33
2½	.....	47.15	34.65	37
3	39.85	43.80	41.55	65
4	51.00	56.05	54.10	105
5	70.15	77.15	74.05	150
6	80.50	88.50	83.15	210
8	114.30	125.65	125.65	325
10	187.90	199.85	199.85	490
12	247.75	265.00	265.00	680
14	372.50	393.30	......	1000
16	490.75	525.10	......	1310
18	666.85	701.25	......	1575
20	804.25	845.65	......	2200
24	1227.50	1306.05	......	3025

Extras to be Added to Above Lists

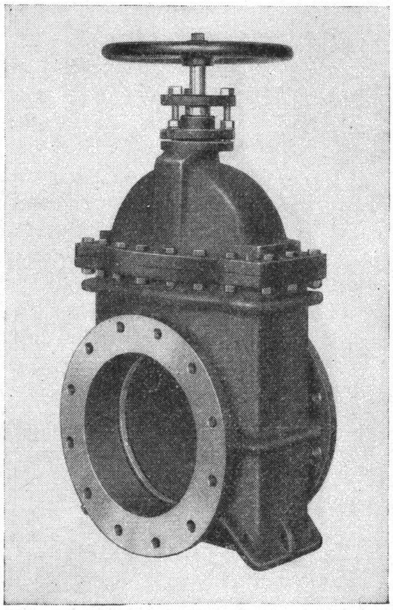
Size valve, in.	Spur or Bevel Gearing	By pass	Gear Case
12	$110.05	$ 82.50	$78.15
14	127.15	82.50	78.15
16	127.15	123.60	78.15
18	$127.15	$123.50	$78.15
20	127.15	123.50	78.15
24	143.90	164.85	78.15

Note—Class 50 and 100 valves for 50 and 100 lb. can also be furnished. Information and prices on request.

Open stock.

GATE VALVES

RENSSELAER AWWA SQUARE BOTTOM, CLASS 150



Iron Body, Bronze Mounted

Double disc, parallel seat.

Pressure Ratings

Size valve, in.	Working press., lbs.	Test press., lbs.
4 to 12	200	350
14 to 60	175	300

Rensselaer square bottom gate valves are especially designed and recommended for:

Throttling service
Altitude control
Emergency shut off
Frequent operation
Filtration plants
Intake towers
Sewage disposal plants
Vertical pipe lines

The main object of this design is to prevent the downstream gate (the gate opposite the pressure) from tilting into the downstream port opening.

The three point support provided throughout entire length of gate travel eliminates any tendency for downstream gate to tilt and score face of seat ring under high water velocity or throttling service.

Construction Details

Below the center of the downstream gate two heavy projecting lugs, or feet, are cast as an integral part of the gate. Non-corrodible metal shoes are secured to the feet, and have a flat face slightly higher than the face of the gate ring. At top center of gate another non-corrodible metal shoe is located above the gate ring.

Stainless steel tracks extending full length of gate travel are secured in valve body on each side of downstream seat ring. Tracks have smooth, true surfaces parallel to and in same plane as surface of seat ring. Bottom section of tracks are tapered to insure that gate shoes will not bear on tracks when gates are in closed position. Top center gate shoe rides on a similar track at top of valve.

Seat ring and gate ring do not come in contact with each other during entire operation of the valve, except when in the fully closed position.

Single Square Bottom

Size valve, in.	Non-Rising Stem Hub, each	Non-Rising Stem Flanged, each	Non-Rising Stem Wt. ea., lbs.	Outside Screw and Yoke Hub, each	Outside Screw and Yoke Flanged, each	Outside Screw and Yoke Wt. ea., lbs.
10	$ 241.60	$ 254.25	475	$ 282.15	$ 294.10	530
12	303.48	322.18	670	357.63	374.88	750
14	463.60	484.10	990	529.50	550.30	1140
16	591.15	624.50	1300	673.00	707.35	1480
18	775.92	809.22	1615	887.22	921.62	1815
20	942.75	983.65	2230	1063.25	1104.65	2480
24	1380.11	1447.31	3065	1550.81	1620.36	3365

Double Square Bottom

Both gates are supplied with tracks and feet. Protects valve against flow damage from either direction.

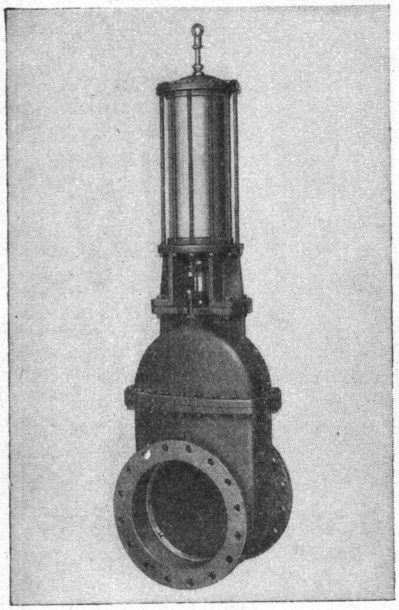
Size valve, in.	Non-Rising Stem Hub, each	Non-Rising Stem Flanged, each	Non-Rising Stem Wt. ea., lbs.	Outside Screw and Yoke Hub, each	Outside Screw and Yoke Flanged, each	Outside Screw and Yoke Wt. ea., lbs.
10	$ 297.41	$ 310.06	495	$ 337.96	$ 349.91	550
12	368.60	387.30	705	422.75	440.00	785
14	556.66	577.16	1060	622.56	643.36	1210
16	699.02	732.37	1385	780.87	815.22	1565
18	905.74	939.04	1735	1017.04	1051.44	1935
20	1096.44	1137.34	2370	1216.94	1258.34	2620
24	1565.99	1633.19	3235	1737.69	1806.24	3535

Open stock.

Note—All above valves can be furnished with Doublex Simplex mechanical joints.

GATE VALVES

RENSSELAER CYLINDER OPERATED

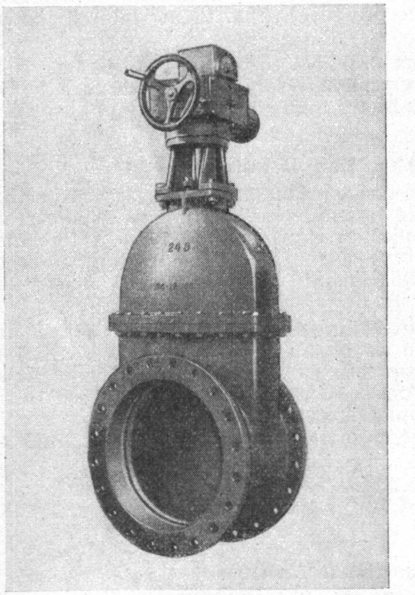


Recommended where operation is frequent, where fast operation is required, or where valves are in remote or inaccessible location.

Illustration shows valve with bronze tubing type cylinder. Also available with bronze lined cast iron cylinder.

Complete Information and Prices on Request

RENSSELAER ELECTRIC MOTOR OPERATED



Recommended for large valves and for higher pressure small valves, where valves are installed in remote, inaccessible or hazardous locations, or where frequent operation of heavy valves is necessary.

Ideal on installations where automatic operation of valve is to be controlled by electrical pressure or float control switches.

Illustration shows a non-rising stem flange end valve with motor unit and dial position indicator.

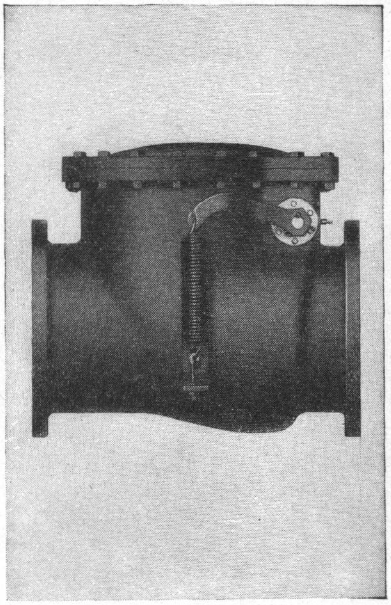
Complete Information and Prices on Request

Other Special Valve Features Available

By-Passes
Chain Wheels
Cleanouts
Gearing
Gear Cases
Handholes
Indicators
Indicator Posts
Stem Protectors

CHECK VALVES

RENSSELAER SWING TYPE



Quiet Closing; Iron Body, Bronze Mounted; Clearway

Recommended where-ever positive elimination of slam, long life and low head losses are desired. They may be mounted in either horizontal, vertical, or inclined pipe lines for water, oil or gas service.

Straight through (equal end) or increasing types are available. The increasing type saves space by eliminating increasers.

Flanged Ends Only

No other types of ends are available.

Flanges conform to the Class 125 American Cast Iron Pipe Flange Standard.

Pressure Ratings

Size valve, in.	Working pressure, lbs. Non-shock cold water, oil or gas	Working pressure, lbs. Saturated steam	Hydrostatic test pressure, lbs.
3 to 24	175	125	350

Outside lever and spring (as illustrated) is standard equipment. Double levers may be supplied on special order. Lever arms are steel and are furnished with either oil tempered steel springs or cast iron weights as specified.

Built of high-strength cast iron, bronze mounted, with bronze hinges, and stainless steel gate and hinge pins.

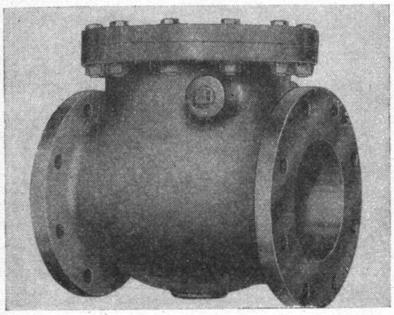
Operation

These valves are quiet closing and positively eliminate slam by insuring that the gate is seated at approximately the instant the water column in the pump discharge line comes to rest. Spring tension is adjustable to suit operating conditions.

Size valve, in.	Each	Wt. each, lbs.	Size valve, in.	Each	Wt. each, lbs.
3	$ 62.55	85	14	$ 641.30	1034
4	86.15	134	16	726.15	1238
6	127.00	228	18	989.85	1700
8	183.00	390	20	1214.50	2080
10	247.65	553	24	1663.75	3150
12	344.30	719			

CHECK VALVES

RENSSELAER SWING TYPE



Iron Body, Bronze Mounted

Single gate construction. Cast iron bodies; bronze seat and gate ring; heavy bronze hinges; stainless steel gate and hinge pins, supported by sturdy bearings inside valve body.

Pressure Ratings

Size valve, in.	Working pressure, lbs. Non-shock cold water, oil or gas	Working pressure, lbs. Saturated steam	Test pressure, lbs.
3 to 30	175	125	350

Valves regularly furnished with flanged ends; flanges faced and drilled to Class 125 American Cast Iron Flange Standard. Other ends on special orders.

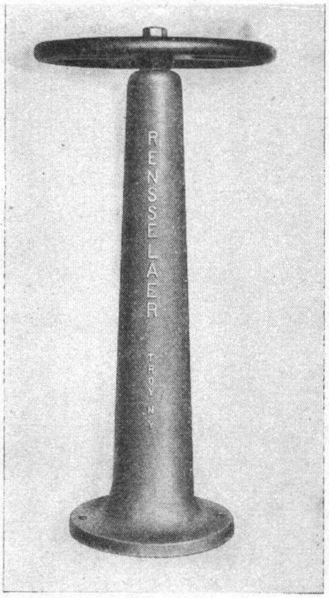
Size valve, in.	Flange Ends, each	Hub Ends, each	Screwed Ends, each	Av. wt. ea., lbs.
3	$ 30.75	$ 30.75	$ 30.75	85
4	41.50	41.50	41.50	134
6	65.13	65.13	65.13	228
8	121.13	110.12	121.13	390
10	193.12	166.50	......	553
12	267.56	243.18	......	719

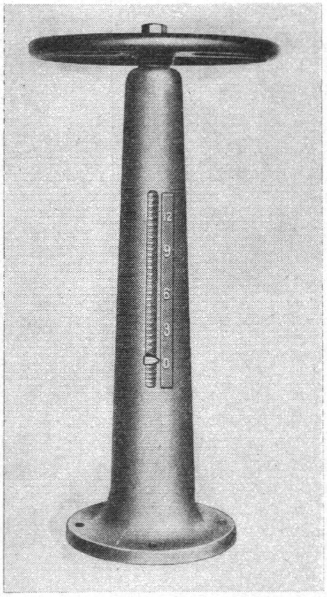
Size valve, in.	Flange Ends, each	Hub Ends, each	Av. wt. each, lbs.
14	$ 492.12	$ 492.12	1035
16	651.38	651.38	1240
18	868.63	862.63	1700
20	1013.38	1013.38	2100
24	1447.56	1447.56	3150
30	2524.94	....	4300

All above, open stock.

VALVE FLOOR STANDS

RENSSELAER STANDARD PATTERN





Types

Non-rising stem.
Rising stem.
Indicating.
Geared.
Enclosed geared.
Motor operated.

Used with extension stems to operate non-rising stem, rising stem, or outside screw and yoke type valves, and sluice gates.

Directions for Ordering

The following information should accompany all orders or inquiries.

1—Type of Floor Stand (rising or non-rising stem).

2—Size and cut of valve.

3—Types of valve—rising or non-rising stem or outside screw and yoke.

4—Distance from floor to center line of valve.

5—If stem guides are used, distance from valve to center line of stem valve.

6—Direction in which valve turns to open.

7—State whether Indicators, Stem Cover or other extras are desired.

8—**Other Make Valves.** If floor stand is to be used with another make of valve, give:—

Style and catalog number
Manufacturer's name
Diameter of valve handwheel
Number of turns to open
Diameter of stem
Distance center line of valve to handwheel

Dimensions

Diam. base 12 in.; thickness base ⅞ in.; diam. bolt circle 10 in.; four ¾ in. bolts in base; height of stand 34 in. Floor stand handwheels are same diameter as those furnished on valves but are never less than 10 in.

	Each
Non-Rising Stem—Wt. each 125 lbs.	$ 60.83
Non-Rising Stem—With indicator; wt. each 125 lbs.	78.59
Rising Stem—Wt. each 125 lbs.	74.00
Rising Stem—With ball or roller bearings; wt. each 140 lbs.	140.39

Prices on geared floor stands on request.

Prices of extension stems and couplings on request.

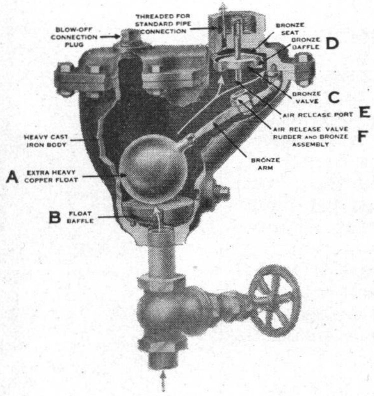
Stem Guides With Support

Cast iron, bronze bushed, adjustable in two directions. Should be used for all extension stems where length exceeds 15 ft., and one for each added 15 ft.

Adjustable horizontally to, in.	**13½**	**24**
Each	$34.00	42.55

AIR AND VACUUM AND AIR RELEASE VALVES

RENSSELAER



For 150 Pounds Water Working Pressures

Test pressure 300 lbs.

Uses

Water mains.
Liquid tanks.
Turbine pump discharge.
Booster pump bowls.
Air tanks.
Sand traps or any similar installation where control of air discharge, air inlet, or liquid level is required.

Combine the features of both vacuum valves and air release valves.

They automatically permit:

Escape of air from pipe or containers when being filled with liquid.

Air flow into pipe lines or containers when being emptied of liquids.

Escape of accumulated air under pressure from the high points of pipe lines or containers.

The white arrows in the illustration indicate the passage of air from the inlet through the valve to the outlet, when the valve is open.

Bodies and covers are high-strength cast iron. Floats are seamless copper spheres. Internal working parts are bronze. A rubber air release seat assures tight closure.

Button inlet connection, screwed in 1, 2 and 3 in. sizes, flanged in 4 in. size.

Size inlet, in.	Each	Top tap, in.	Length, in.	Width, in.	Height, in.	Net wt. each, lbs.	Ship. wt. each, lbs.
1	$ 51.87	1¼	11¼	6¼	9⅝	25	34
2	65.63	2½	13¾	7¼	12¾	47	62
3	112.06	3½	16¾	8⅞	17¼	96	117
4	164.31	4	19	10	20¾	158	183

One in a box.

EXTENSION SERVICE BOXES

BUFFALO PATTERN

No. P-101—Cast Iron

Diameter of shaft 2½ in.

Size Nos.	Complete, each	Top, each	Bottom, each	Length sections, in. Top	Length sections, in. Bottom	Extension, in.	Wt. each, lbs.
89A	**$1.88**	**$1.13**	**$0.75**	12	12	15-21	17
90B	**2.03**	**1.20**	**.83**	12	18	18-26	18½
90C	**2.40**	**1.50**	**.90**	18	15	21-30	20½
91C	**2.33**	**1.20**	**1.13**	12	21	24-30	24
92C	**2.48**	**1.20**	**1.28**	15	24	27-36	26
92D	**2.78**	**1.50**	**1.28**	18	27	27-39	30½
93D	**3.00**	**1.50**	**1.50**	18	32	36-48	35
93E	**3.23**	**1.73**	**1.50**	24	32	36-54	39
94E	**3.45**	**1.73**	**1.73**	24	39	42-60	42
95E	**3.68**	**1.73**	**1.95**	24	42	48-66	45
100E	**3.98**	**1.73**	**2.25**	24	49	54-72	46
100F	**4.20**	**1.73**	**2.48**	30	51	54-78	50

	Each
Covers Only—Water or gas (specify)	**$0.30**
Brass Screws	**.23**
Stop Box Keys	**.30**

EXTENSIONS

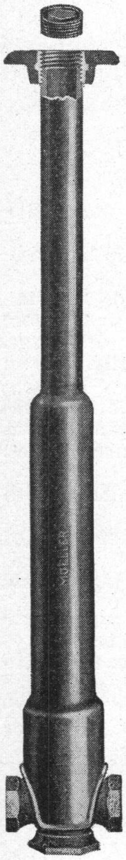
For No. P-101 Boxes

To increase length of box, in.	**16½**	**28**
Weight each, lbs.	9	12
Each	$1.13	1.43

Open stock.

EXTENSION SERVICE BOXES

MUELLER IMPROVED



Arch Pattern

Superior features make them ideal for new water systems and for old water works desiring to improve. Access to the box is gained by removal of the cast iron plug with recessed pentagon head which is threaded into a brass bushing cast in the lid. The heavy cast iron lid is threaded to the shaft and no means are provided for its removal after installation.

Coated inside and out with air-drying enamel.

May be used with any straight or round way stop, from ½ to 1 in. inclusive.

Lengths given below are the full extension. The 2 ft. No. H-10306 box telescopes 6 in.; the 2 ft. No. H-10308 box telescopes 3$\frac{9}{16}$ in.; all others telescope 1 ft.

Stops are furnished separately and are not included in the price of box.

No. H-10306—1¼ in. Box, for Water

Length, ft.	Each	Aver. wt. each, lbs.
2	$1.80	12
2½	1.94	14
3	2.08	15
3½	2.22	16
4	2.36	17
4½	2.50	18
5	2.64	19
5½	2.78	20
6	2.92	22
6½	3.06	23
7	3.20	24
7½	3.34	25
8	3.48	26
8½	3.62	27
9	3.76	28
9½	3.90	29
10	4.04	31

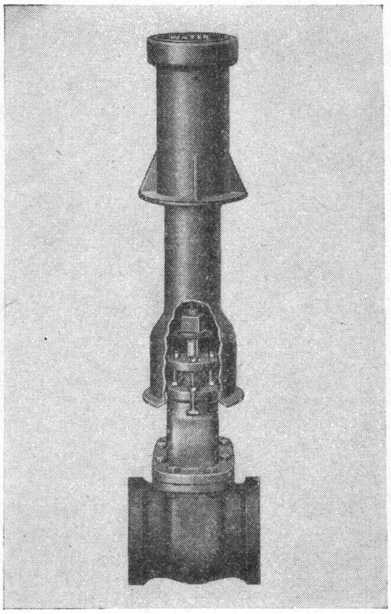
No. H-10308—1½ in. Box, for Water

2	$2.36	13
2½	2.54	15
3	2.72	16
3½	2.90	17
4	3.08	18
4½	3.26	20
5	3.44	21
5½	3.62	22
6	3.80	23
6½	3.98	25
7	4.16	26
7½	4.34	27
8	4.52	28
8½	4.70	30
9	4.88	31
9½	5.06	32
10	5.24	33

Open stock.

VALVE BOXES

TWO PIECE



Adjustable Slip Type

Cast iron. 4¼ in. shaft.

Bell bottom measures 7½ in. diameter by 9 in. high inside, for 4 through 12 in. valves.

Nos.	Complete, each	Extension, in.	Wt. each, lbs.
V41-R	$6.10	22-36	65
V42-R	6.45	27-42	75
V43-R	6.80	34-48	85
V44-R	7.15	39-54	95
V45-R	7.50	46-60	105

Each

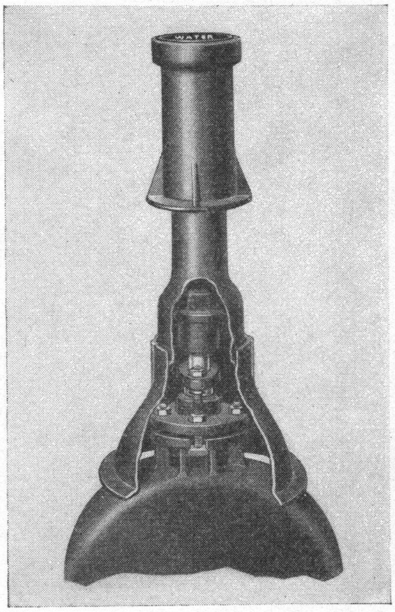
No. V55-R—Extension section, increases length of box 18 in.; wt. each 30 lbs. $1.55

Open stock.

Note—See tables below for trench depths.

VALVE BOXES

THREE PIECE



Adjustable Slip Type

Cast iron; 5¼ in. shaft.

Size Nos.	Complete, each	Base, each	Extension, in.	Wt. each, lbs.
AAA	$ 7.00	$3.50	17 stationary	87
AA	8.25	3.50	26–30	105
A	8.90	3.50	33–42	120
B	8.20	3.50	36–48	125
C	8.50	3.50	45–54	130
CC	10.00	3.50	51–60	135
D	10.45	3.50	45–66	145
E	11.00	3.50	63–72	150
F	11.95	3.50	63–84	165
G	12.90	3.50	75–96	175

Note—Above boxes equipped with No. 160 oval base for 14 and 16 in. valves. For 18 and 20 in. valves order No. 162 oval bases, adding 15 lbs. to weight and $2.50 to list prices.

Open stock.

Table for Determining Length of Valve Box for Various Depths of Trench

Two Piece Boxes

Size valve, in.	Bottom of box to bottom of trench, in.	Depth trench, ft. 3	3½	4	4½	5	5½	6	6½	7
		Box Nos.								
3	8	V41–R	V41–R	V42–R	V43–R	V44–R	V45–R	*	*	*
4	9	V41–R	V41–R	V42–R	V43–R	V44–R	V45–R	*	*	*
6	15	V41–R	V41–R	V42–R	V42–R	V43–R	V44–R	V45–R	*	*
8	21	......	V41–R	V42–R	V41–R	V42–R	V43–R	V44–R	V45–R	*
10	27	......	......	V42–R	V41–R	V41–R	V42–R	V43–R	V44–R	V45–R
12	33	......	......	......	V41–R	V41–R	V41–R	V42–R	V43–R	V44–R

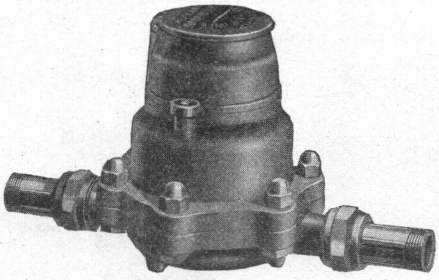
*Longer length boxes use No. V55–R Extension Section.

Three Piece Boxes

Size valve, in.	Bottom of box to bottom of trench, in.	Depth trench, ft. 4½	5	5½	6	6½	7	7½	8
		Box Nos.							
14	36½	AA	A	A	B	B	C	D	E
16	41½	...	AA	A	A	B	C	C	CC
18	45	...	...	.	AA	A	A	B	C
20	50	...	...	.	...	AA	A	B	C

WATER METERS

BUFFALO

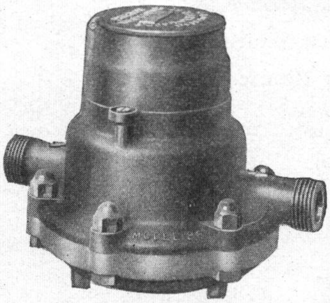


Solid Casing Type

A rugged meter stressing simple construction and full interchangeability of parts. Available in two casing types, all other parts being alike.

Niagara

Gray cast iron casing, hot zinc dipped for most hard water (water having PH 7.3 or greater).



Frost Bottom Type

American

Bronze casing, for soft water (water having PH of less than 7.3).

Either the Niagara or the American can be equipped with a gray cast iron, hot zinc dipped frost bottom for protection against freezing. Breaks by tension around edge of chamber, not by shearing of the lugs. Breaking pressure of 500-560 lbs. is controlled at the factory and is not affected by tightening the flange bolts. Breaking of bottom allows all interior parts including gear train to separate and avoid ice damage.

Cast bronze gear train, machined and covered with a hard outer shell of pure chromium. Gear train is water lubricated, wear resisting, corrosion proof, sanitary and extremely simple. Oil-enclosed type gears are available and interchangeable with chromium-shell type.

Register can be furnished in either straight reading or round dial, indicating either gallons or cubic feet (specify which).

All Niagara sizes to and including 2 in., and American to 1 in. have external threaded ends for bronze union couplings. 1¼ to 2 in. American meters have internal standard pipe threads on ends. 2½ to 6 in. meters are flanged and companion flanges are included without charge.

Solid Casing Type

		Niagara			American		
Size, in.	Delivery U.S. GPM	Each	Bronze Couplings, per pair	Wt. each, lbs.	Each	Bronze Couplings, per pair	Wt. ea., lbs.
⅝x½	20	$ 24.00	$1.50	13	$ 30.00	$1.50	12
⅝x¾	20	24.00	2.25	14	30.00	2.25	13
¾	30	36.00	2.25	17	45.00	2.25	17
¾x1	30	.....	....	...	45.00	3.30	22
1	50	52.80	3.30	27	66.00	3.30	25
1¼	75	72.00	4.50	35	90.00	4.50	35
1½	100	96.00	6.00	46	120.00	6.00	42
2	160	144.00	9.00	78	180.00	9.00	66
2½	225	240.00	....	160	300.00	....	148
3	300	300.00	....	187	366.00	....	172
*3	360	360.00	....	260	......	....	...
*4	500	510.00	....	466	600.00	....	505
*6	1000	1020.00	....	760	1200.00	....	803

Frost Button Type

Size, in.	Delivery U.S. GPM	Each	Bronze Couplings, per pair	Wt. each, lbs.	Each	Bronze Couplings, per pair	Wt. ea., lbs.
⅝x½	20	$ 24.00	$1.50	13	$ 28.00	$1.50	12
⅝x¾	20	24.00	2.25	14	28.00	2.25	13
¾	30	36.00	2.25	17	42.00	2.25	17
1	50	52.80	3.30	35	61.60	3.30	35

*Heavy duty type.

	Add
Oil-Enclosed Gear Train—All sizes to 2 in. (except ⅝x½ and ⅝x¾ American solid casing type, no charge)....	$1.00
Dial Extensions—3 ft. or less	4.00
Longer Extensions ....Per foot	.50

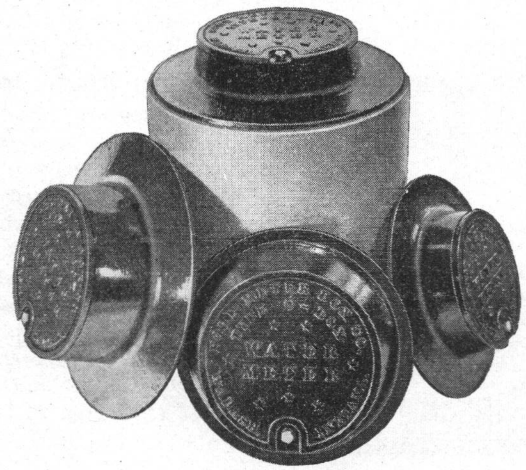
Bent Couplings

Size, in.	½	¾	1
Per pair	$1.50	2.00	3.00

One meter in a box.

METER BOX COVERS

FORD TYPE C



Cast Iron, Single Lid

Have overlapping lids and are particularly adaptable for installing in lawns. They can also be used in sidewalk settings by leaving a crack between the lid and the cement.

Where frost commonly penetrates to a depth of one foot or more, 15 in. covers are not recommended because of the small space between risers and tile.

For 18 in. ID Tile

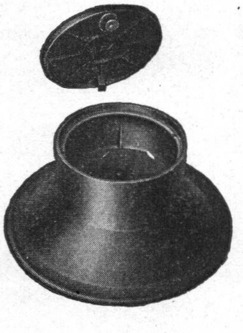
Nos.	Each	Lid, in.	Depth, in.	Wt. each, lbs.
C-2	$6.00	9½	4	26
C-32	6.40	11½	4	30

For 20 in. ID Tile

Nos.	Each	Lid, in.	Depth, in.	Wt. each, lbs.
C-3	$7.40	11½	4	36
C-33	8.20	11½	6	37

Note—Nos. C-32, C-3 and C-33 can be provided with lids having lettering for gas meters if so ordered, at no extra cost.

FORD WABASH



Cast Iron, Double Lid

Provides the utmost in frost protection for pit meters. The extra depth, the sloping skirt, and the 4 in. dead air space provided by the inner lid, all help to reduce to a minimum the heat loss from the top of the setting.

Double lid covers are recommended where frost penetrates 12 in. or more and the setting is 4 ft. or more in depth.

Total depth 9½ in. Inset type top lid.

No. W-3H is extra heavy for withstanding traffic.

For 18 in. ID Tile

Nos.	Each	Lid, in.	Wt. ea., lbs.
W-2	$10.00	9½	46
W32	12.00	11½	54

For 20 in. ID Tile

Nos.	Each	Lid, in.	Wt. ea., lbs.
W-3	$13.00	11½	60
W-3-N	19.00	11½	96

All above, open stock.

INDUSTRIAL METERS

For accurate measurement of industrial liquids including: hot and cold water, fuel oil, lube oil gasoline, solvents, cyanide solutions, molasses, syrups, acids, alkalis, vinegar, fruit juices, vegetable oils.

For continuous measurements: for batch measurements with manual or automatic control.

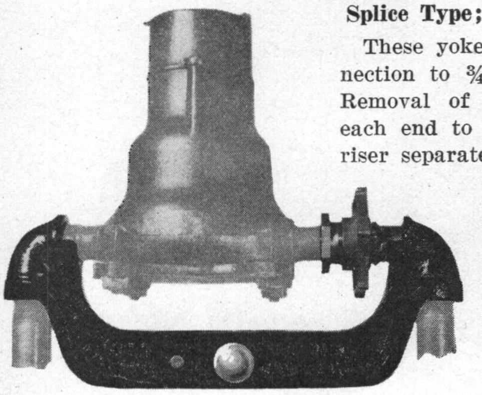
Write for Individual Recommendations and Quotations

WATER METER YOKES

FOR RISER TYPE

A special device to facilitate connecting a water meter in a service line. Designed to permit easy installation and removal of the meter yet preventing many of the attendant difficulties encountered in frequent meter changes. The installation or removal of the meter requires only the turning of the hand wheel of the expansion connection which does not disturb the piping.

Splice Type; Integral Iron Ends

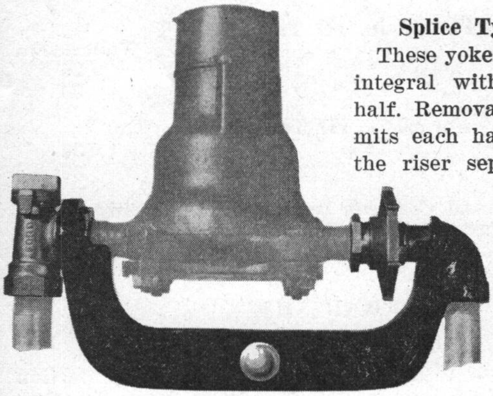


These yokes are made for connection to ¾ in. iron pipe only. Removal of center bolt permits each end to be screwed onto its riser separately after which ends are brought together and fastened by bolt. These yokes are not recommended where water is chemically active and deposits in iron fittings.

No.	Each	Meter size, in.	Pipe size, in.	Space between risers, in.	Wt. each, lbs.
302	$3.50	⅝x¾	¾	11¼	6

One in a box.

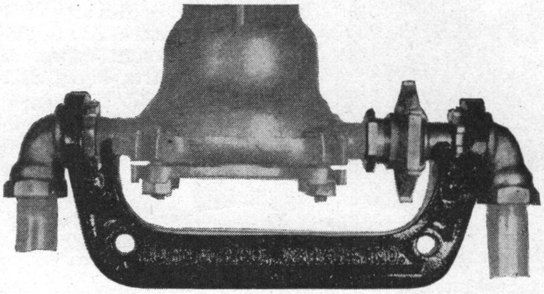
Splice Type; Valve Inlet



These yokes have outlet ells cast integral with iron yoke outlet half. Removal of center bolt permits each half to be attached to the riser separately after which they are brought together and fastened by bolt. These yokes are not recommended where water is chemically active and deposits in iron fittings.

No.	Both ends for Iron, each	Valve only for Copper, each	Meter size, in.	Pipe size, in.	Space between risers, in.	Wt. each, lbs.
410	$5.90	$6.50	⅝x¾	¾	11¾	7

One in a box.

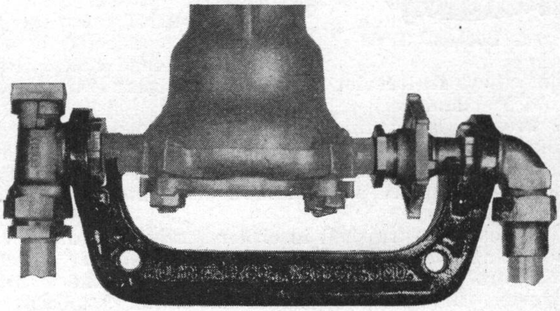


Shown with both ends for iron pipe.

Riser; with Plain Bronze Ends

No.	Both Ends for Iron, each	One End for Copper, each	Both Ends for Copper, each	Meter size, in.	Pipe size, in.	Wt. each, lbs.
502	$4.70	$5.10	$5.50	⅝x¾	¾	7¾

One in a box.



Shown with both ends for copper.

Riser; Valve Inlet, Plain Bronze Outlet

No.	Both Ends for Iron, each	Valve Only for Copper, each	Outlet Only for Copper, each	Both Ends for Copper, each	Meter size, in.	Pipe size, in.	Wt. each lbs.
510	$6.50	$7.10	$6.90	$7.50	⅝x¾	¾	8½

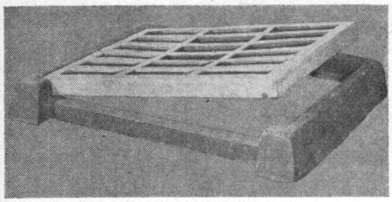
One in a box.

Note—In ordering all above meters, specify type of pipe connection. Unless otherwise specified yokes will be for iron pipe.

GRATES AND FRAMES

CAST IRON

DRAIN



One Side Open; For Curb or Gutter

Frame 32½ in. long by 24⅛ in. wide.

Grate 27 in. long by 19½ in. wide.

Each

Type 12—Wt. each 350 lbs. $34.10

Closed Sides, For Street

Frame has all sides closed for use in street center or away from curb in gutter center.

Dimensions same as for above.

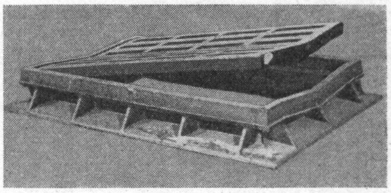
Each

Type 12 Special—Wt. each 430 lbs. $41.90

Grates only—For both above frames; wt. each 125 lbs. 15.00

Open stock.

INLET



Closed Sides, For Street

Frame has all sides closed for use in street center or away from curb in gutter center.

Frame 46½ in. long by 29¾ in. wide.

Grate 39¼ in. long by 22$\tfrac{7}{16}$ in. wide.

Each

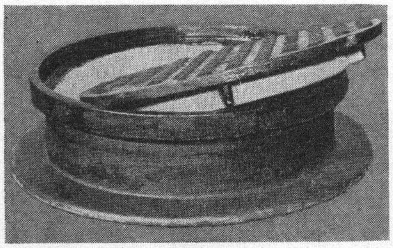
Type 13—Wt. each complete 695 lbs. $67.80

Grates only—For type 13 frames; wt. each 275 lbs. 28.85

Open stock.

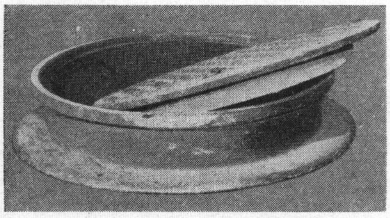
MANHOLE RINGS AND COVERS

CAST IRON



Denver Pattern

	Each
Old Style Denver—24 in. diameter; wt. each 321 lbs.	$27.75
Standard Heavy Denver—24 in. diameter; wt. each 405 lbs.	36.00
Standard Denver—30 in. diameter; wt. each 500 lbs.	47.25
New Standard Heavy Denver—30 in. diameter; wt. each 649 lbs.	63.30

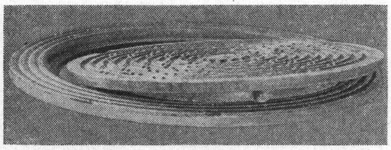


Colorado Springs Pattern

Diameter, in.	24
Wt. each, lbs.	228
Each	$21.00

STORM SEWER RINGS AND COVERS

CAST IRON

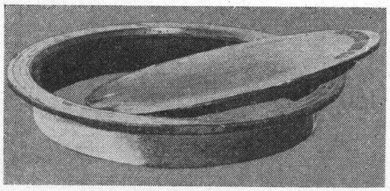


Sidewalk Type

Diameter, in.	24
Wt. each, lbs.	285
Each	$27.75

COAL HOLE RINGS AND COVERS

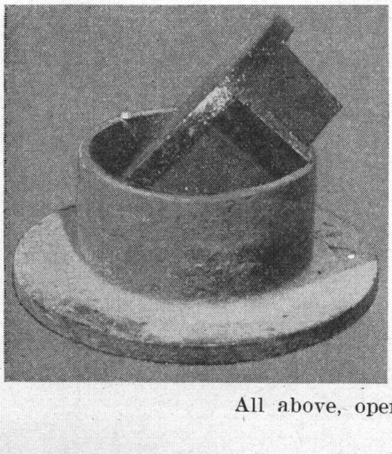
CAST IRON



Diameter, in.	18	20	24
Wt. each, lbs.	60	85	125
Each	$9.00	12.75	15.00

LAMP HOLE RINGS AND COVERS

CAST IRON

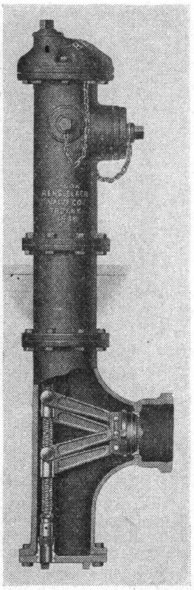


Diameter, in.	8
Wt. each, lbs.	60
Each	$15.90

All above, open stock.

FIRE HYDRANTS

RENSSELAER



Advantages

Easier to Service—Working parts easily removed by one man. No special wrench or hoist required. No seat ring to remove.

No Digging for Simple Repairs—All working parts easily removed through top.

No Digging Due to Standpipe Breakage—Ground line flange feature is standard on Rensselaer hydrants.

No Digging or Shutting Off Water When Lengthening Hydrant—Ground line flange makes this unnecessary.

No Flooding Due to Standpipe Breakage—Main valve mechanically locked in closed position (not dependent on water pressure).

Water Hammer Eliminated—With "knuckle joint" principle the main valve moves slowly to seat (approximately ⅛ in. on last turn) and against water pressure. (No jumping to seat).

No Scarring of Valve Seat—Main valve is rubber, not hard material. Also, obstructions cannot lodge on seat, as it is vertical.

Base Flange—Easy access through bottom.

Nozzles Easily Replaced—Threaded-in (not leaded-in).

Threaded-in Seat Ring—No leakage.

Positive Drip—Actuated automatically and mechanically (not dependent on water pressure).

Drip Barrel Threaded-in—Large capacity. Fast draining. No clogging.

Solid Bronze, Self-Aligning Stuffing Box Glands—Built on ball joint principle.

No Lubrication of Upper Stem Necessary—No threaded working parts in "dry dome."

You can open a Rensselaer Fire Hydrant quicker and get more gallons through the nozzles than any other type of hydrant.

No other hydrant is as easy to repair or as cheap to maintain as the Rensselaer.

Rensselaer Fire Hydrants meet all AWWA specifications.

	4 in. Valve Opening 6 in. ID standpipe 4 or 6 in. hub end			5 in. Valve Opening 7 in. ID standpipe 6 in. hub end		
Trench depth, ft.	Without Pumper, each	With Pumper, each	Wt. ea., lbs.	Without Pumper, each	With Pumper, each	Wt. ea., lbs.
2	$109.40	$124.20	438	$134.40	$149.75	519
2½	112.15	126.90	455	138.55	154.00	540
3	114.90	129.65	472	142.80	158.10	561
3½	117.65	132.40	489	146.85	162.35	582
4	120.40	135.05	506	151.15	166.55	603
4½	123.15	137.80	523	155.35	170.75	624
5	125.90	140.55	540	159.55	174.90	645
5½	128.65	143.30	557	163.80	170.25	666
6	131.40	146.05	574	168.00	183.55	687
6½	134.15	148.80	591	172.30	187.60	709
7	136.90	151.55	608	176.40	191.85	730
7½	139.65	154.30	625	180.65	196.00	751
8	142.40	157.05	642	184.80	200.25	772

Extras

To be added to above prices.

4 in. Flanged End	$2.75
6 in. Flanged End	4.00

Secondary Valves

Hub one end. Flanged other end. Prices include bolt, nuts and gasket.

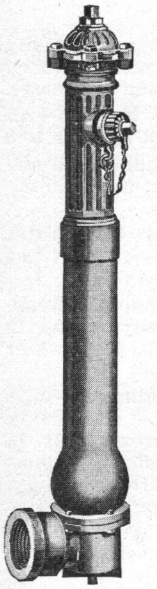
Size, in.	4	6
Wt. each, lbs.	100	190
Each	$44.00	66.65

Hydrant operating wrench .... Each $3.75

Open stock.

FIRE HYDRANTS

NATIONAL COMPRESSION



No. 71—Bronze Mounted; Rubber Valve

Anti-freezing automatic drain closes against pressure.

Designed for private corporations and other installations where something smaller than the regular fire hydrant will suit the purpose.

Seat and all the metal operating mechanism are made of the best brass and gun metal. One hard vulcanized rubber valve controls the entire valve for both supply and waste.

All inside working parts can be lifted out for repairing without digging up the hydrant.

Always furnished for threaded iron pipe inlet and iron pipe hose thread outlet unless otherwise ordered.

Operating wrench furnished with each hydrant.

To set in ground, ft.	Inlet, outlet and valve opening, in. 1¼ Each	Wt. ea., lbs.	*1½ Each	Wt. ea., lbs.
1½	$35.20	31	$48.75	42½
2	36.08	33	49.28	45
3	36.96	37	50.34	50
4	37.84	41	51.39	55
5	38.72	45	52.45	60
6	39.60	49	53.50	65

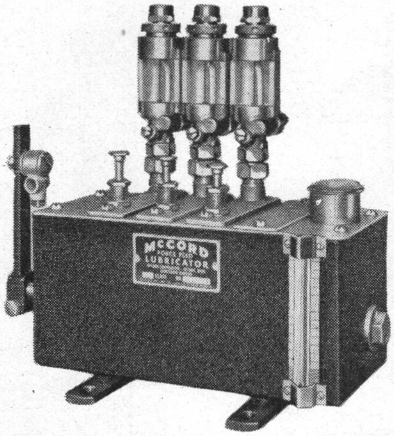
To set in ground, ft.	Inlet, outlet and valve opening, in. **2 Each	Wt. each, lbs.
1½	$66.00	65
2	66.88	70
3	68.64	80
4	70.40	90
5	72.16	100
6	73.92	110

	Add to list
*With 2 in. inlet	$3.52
*With two 1½ in. outlets	3.52
**With 2½ or 3 in. inlet	3.52
**With two 2 in. outlets	7.04
**With 2½ in. outlet	3.04

Open stock.

MECHANICAL LUBRICATORS

McCORD CLASS "SF"



For Cylinder and Bearing Lubrication

Widely used on Diesel, gas and steam engines and compressors. They are particularly suited to industrial applications and require the minimum amount of attention.

Can be adjusted to feed from a fraction of a drop to a stream, with accurate oil delivery under varying conditions assured at all times. Hand flushing of each feed is accomplished without disturbing other feeds.

Individual pump units can be removed without stopping the lubricator.

Standard Equipment

Fitted with Bull's Eye or Clearsite sight feeds. A standard spring loaded terminal check valve is furnished with each pump unit.

Standard finish is black paint and brass.

Internal End Ratchet Drive

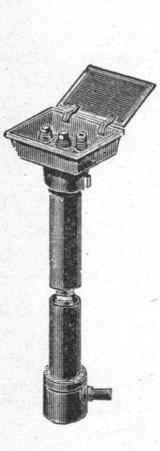
Nos.	Each	Approx. cap., pts.	No. of feeds	Wt. each, lbs.
250	**$49.50**	2	1	35
251	**70.50**	3	2	45
252	**90.75**	4	3	50
253	**111.00**	4	4	50
254	**130.50**	8	5	65
255	**151.50**	8	6	65
256	**172.50**	12	7	65
257	**192.00**	12	8	80
258	**213.00**	12	9	80
259	**232.50**	12	10	85
260	**252.00**	16	11	90
261	**273.00**	16	12	90

One in a box.

Note—Larger sizes up to 32 pint capacity and 24 feeds are available. Prices on request.

STREET WASHERS

MURDOCK TYPE "D"



No. 130—¾ in. Size; Loose Key

Anti-freezing automatic drain. With cast brass bottom connection, tail piece, coupling nut, nozzle, screw and valve.

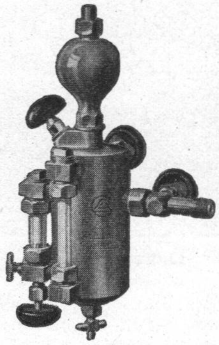
Hose nozzle ¾ in.; combination inlet with removable brass coupling for ¾ in. iron pipe or lead pipe; 1 in. IPT on bottom connections. Brass coupling tail piece threaded for iron pipe unless otherwise specified.

Length in ground, ft.	Each	Wt. each, lbs.
1½	$12.00	16
2	12.00	18
2½	13.60	20
3	13.60	22
3½	15.20	24
4	$15.20	26
4½	16.80	28
5	16.80	30
5½	18.40	32
6	18.40	34

Open stock.

LUBRICATORS

DETROIT IMPROVED STANDARD



Double Connection

A lubricator for general service; used on all kinds of reciprocating steam engines, steam pumps, etc.

The supporting arm is in two parts and connected to the body at about its point of center of gravity holding it firmly and reducing vibration to a minimum.

A heating passage runs through the body and keeps the oil warm, adapting it for feeding heavy oils. A drain stem allows glass to be emptied and cleaned easily. The Sight Feed Glass and Valve are on opposite side from the steam pipe.

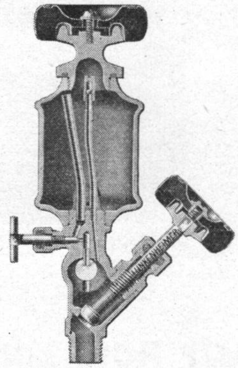
Polished Brass

Cool, unbreakable composition handles.

Capacity, pts.	Each	Pipe thread, in.	Wt. each, lbs.
½	$21.00	½	8
1	23.50	½	10
2	28.50	½	13

One in a box.

LUNKENHEIMER "MAJOR"



Sight Feed

For steam working pressures up to 200 lbs.

For use on small steam engines and pump cylinders.

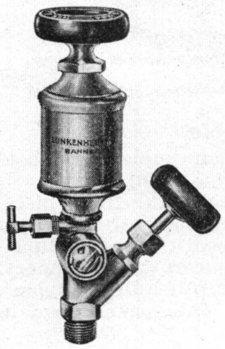
No. 487—Finished Bronze

Size Nos.	Each	Cap., oz.	Shank pipe thread, in.	Wt. each, lbs.
1	$19.00	2¾	⅜	2½
3	26.00	5	½	3¼
5	33.00	10	½	5¼
6	40.00	18	¾	6¼

Size Nos. 1 and 3, four; size Nos. 5 and 6, one in a box.

LUBRICATORS

LUNKENHEIMER "BANNER"



Sight Feed

For 200 lbs. working pressures.

For air compressor cylinders and blowers.

No. 489—Finished Bronze

Size Nos.	Each	Cap., oz.	Shank pipe thread, in.	Wt. each, lbs.
1	$15.50	2¾	⅜	2
3	20.00	5	½	3
5	25.00	10	½	5
6	30.00	18	¾	6

Nos. 1 and 3, four; Nos. 5 and 6, one in a package.

OIL CONTROLS

LUNKENHEIMER "ALVOR" CONSTANT LEVEL

LUNKENHEIMER
ALVOR

Bronze, with Glass Bottle

Automatically maintains a constant oil level in ring oiled bearings or anti-friction bearings suitable for oil bath lubrication. Insures against failure of oil supply and consequent costly shutdown of equipment. Waste of oil is eliminated as the "Alvor" feeds only enough oil to maintain the required level, and as long as oil shows in the bottle, none need be added.

Feeds only when the oil level in the bearing is low enough to break the liquid seal at the end of the shank permitting air to enter the bottle.

Printed directions for installing packed with each oiler.

Installed as directed and with a supply of oil kept in the bottle, the "Alvor" assures unfailing lubrication.

¼ in. pipe thread.

No. 1834—Round Glass

Size Nos.	Each	Cap., oz.	Diam. glass, in.	Height over all, in.	Wt. each, lbs.
1	$2.10	1	1 5/16	5 11/16	.44
2	2.20	2	2 9/16	5 9/16	.56
3	2.20	4	2⅝	8½	.81

No. 1835—Flat Side Glass

Size Nos.	Each	Cap., oz.	Radius glass, in.	Height over all, in.	Wt. each, lbs.
2	$2.50	2	1 5/16	5 9/16	.50
3	2.50	4	1 3/16	8½	.72

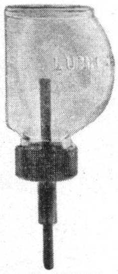
Twelve in a box.

BOTTLE OR SHAFT OILERS

LUNKENHEIMER

LUNKENHEIMER

No. 1815



No. 1816

Straight Blank Shank, Loose Wire Feed

Consists of a glass bottle with threaded neck, a brass base with integral shank and a brass feed wire. A cork washer prevents leakage between base and bottle.

Entirely automatic, feeding only when the shaft is in motion, and only the right amount of oil to insure efficient lubrication.

For use in ⅛ in. pipe tapped or 11/32 in. drilled holes.

No. 1815—Globe Body

Size Nos.	Each	Capacity, oz.	Wt. each, lbs.
1	$0.60	1	.22
2	.65	2	.29
3	.65	4	.40

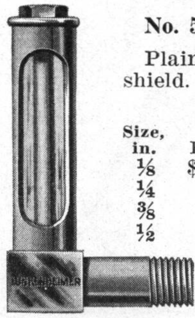
No. 1816—Flat Side Body

Size Nos.	Each	Capacity, oz.	Wt. each, lbs.
3	$0.85	4	.38

Twelve in a box.

OIL GAUGES

LUNKENHEIMER



No. 528—Finished Bronze

Plain, with revolvable shield.

Size, in.	Each	Ht. glass, in.	Center shank to top, in.	Wt. each, lbs.
⅛	$2.80	2 5/32	2⅛	.24
¼	3.10	2 21/32	2⅝	.29
⅜	4.30	3 1/16	3⅛	.54
½	6.00	4 7/32	4⅓	.90

One in a box.

ENGINE LUBRICATORS

LUNKENHEIMER "PARAGON"

LUNKENHEIMER

Sight Feed, for Gas, Gasoline and Oil Engine Cylinders

For correct cylinder lubrication. Feed can be put on or off by snap lever and regulated by turning nut. Large filling hole with slide cover. Ball check retards sudden rush of back pressure and baffle cap diffuses pressure passing ball.

Functions only under engine pressure and should not be installed where pressure is not available, since then it will feed only when pressure hole is uncovered.

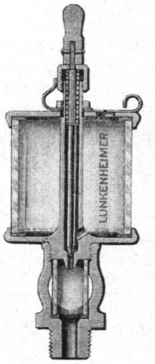
No. 1301—Finished Bronze Base and Top

Size Nos.	Each	Cap., oz.	Shank pipe thread, in.	Wt. each, lbs.
1½	$8.00	1½	¼	.71
2	8.80	2½	⅜	.91
3	9.80	4	⅜	1.18
4	10.50	5	⅜	1.44
5	12.00	10	½	2.12
6	15.50	18	½	3.25

Size Nos. 1½ and 2, six; size Nos. 3 and 4, four; size No. 5, two; size No. 6, one in a box.

OIL CUPS

LUNKENHEIMER, "SENTINEL"



Glass Body, Sight Feed

Fitted with slide cover for filling hole, center stem assembly nut and regulating nut lock spring. Highly dependable indicating feed control; regulated position of feed valve stem is automatically maintained by the long, highly tempered steel spring.

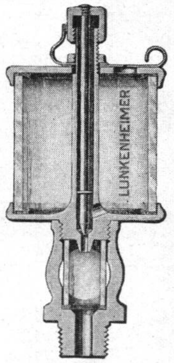
For use on stationary bearings.

No. 1300—Bronze Base and Top

Size Nos.	Finished, each	Nickel Plated, each	Capacity, oz.	Shank pipe thrd., in.	Wt. pkg., lbs.
0	$ 3.80	$4.60	⅝	⅛	4½
1	4.00	....	1	¼	5½
1½	4.20	5.20	1½	¼	7
2	4.80	....	2½	⅜	9
3	5.50	....	4	⅜	6¼
4	6.00	7.40	5	⅜	5¼
5	8.00	9.80	10	½	4¾
6	10.50	....	18	½	3½
8	19.50	....	34	¾	4½

Nos. 0 to 2, twelve; No. 3, six; No. 4, four; No. 5, two; and Nos. 6 and 8, one in a pkg.

LUNKENHEIMER, "ROYAL"



Sight Feed, With Needle Valve Control

Recommended for use on stationary bearings.

A spring, bearing against the knurled regulation cap on top of the needle valve stem, secures the set of the feed when adjusted to any desired point of regulation.

Fitted with slide cover for filling hole, and central stem assembly nut.

No. 1298—Finished Bronze Base and Cap

Size Nos.	Each	Cap., oz.	Shank pipe thread, in.	Wt. pkg., lbs.
000	$3.20	¼	⅛	3
0	3.50	⅝	⅛	4½
1	3.70	1	¼	5½
1½	4.00	1½	¼	7
2	4.40	2½	⅜	9
3	5.00	4	⅜	6¼
4	5.60	5	⅜	5¼
5	7.40	10	½	4¾
6	9.60	18	½	3½

Size Nos. 000 to 2, twelve; size No. 3, six; size No. 4, four; size No. 5, two: size No. 6, one in a box.

OIL CUP WASHERS

LUNKENHEIMER

No. 1062—Cork

Size Nos.	Per dozen	Size Nos.	Per dozen
0	..$0.90	3	..$1.90
1	.. 1.20	4	.. 2.10
1½	.. 1.50	5	.. 2.50
2	.. 1.80	6	.. 3.00

Open stock.

OIL CUP GLASSES

LUNKENHEIMER

LUNKENHEIMER

No. 526

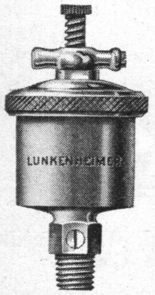
For lubricators, oil cups, oiling devices, etc. Glasses cylindrical in shape, clear, strong and uniform in size. Interchangeable with all styles of cups.

Size Nos.	Each	OD, in.	Ht., in.	No. in pkg.	Wt. pkg., lbs.
0	$0.75	1¼	1⅛	20	1¼
1	.90	1½	1⅜	20	1⅚
1½	1.10	1¾	1⅝	20	3⅕
2	1.40	2	1⅞	20	3⅘
3	1.70	2¼	2⅛	12	3¾
4	2.00	2½	2⅜	12	4 7/16
5	2.40	3	3	6	4
6	2.80	3½	4	6	6⅙

GREASE CUPS

LUNKENHEIMER, "IDEAL"

No. 510—Automatic Feed

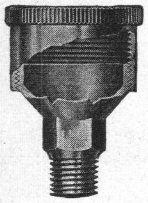


Highly finished bronze compression cup, suitable for engine bearings, journals, etc. It is provided with a leather packed plunger (insuring a tight joint and smooth working), which is so constructed that it is easily raised when cup requires recharging with grease. The spring and plunger are conveniently controlled by thumb nut, which is provided with an automatic lock arrangement to prevent its jarring from position on stem.

Size Nos.	Each	Cap grease, oz.	Height, in.	Shank pipe thrd., in.	Wt. pkg., lbs.
00	$ 3.20	⅓	3¼	⅛	4
0	4.10	1	4⅜	¼	6¾
1	4.80	1½	5	¼	9
2	6.20	3	6⅛	⅜	16¼
3	9.00	6	7¼	½	13
4	12.00	10	8⅜	½	16½

Nos. 00 to 2, twelve; Nos. 3 and 4, six in a package.

STEEL



Plain Compression

Drawn from sheet steel; lighter, neater and stronger than a cast cup.

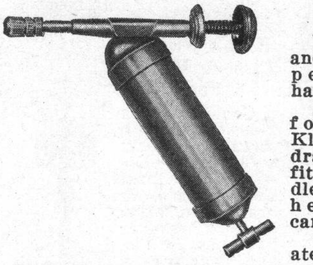
Cap makes a tight, sealed fit over the cup threads.

Nos.	Each	Capacity, oz.	ID, in.	Thread, in.	Wt. 100, lbs.
000	$0.19	¼	¾	⅛	4
00	.25	½	1	⅛	8.3
0	.31	⅔	1¼	¼	16.3
1	.38	1	1½	¼	23
2	.60	2	2	⅜	38
3	.85	3½	2½	½	53.2
4	1.18	5	3	½	71.3

Open stock.

LINCOLN KLEENSEAL LUBRICATING EQUIPMENT

STANDARD PUSH-TYPE GUNS



All-Steel

Unique balanced design permits one-hand operation.

Linpak nozzle for contacting Kleenseal, Hydraulic and Zerk fittings. Handles light or heavy lubricants.

Can be operated like an oil can, for lubricating chains, sprockets, exposed gears and for filling grease cups. Pump plunger is totally enclosed and always protected against damage—cannot collect grit or dirt when gun is being filled. Over all length of gun, full or empty remains the same.

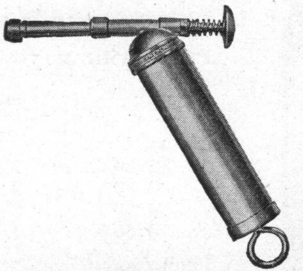
Can be filled by suction.

Gun barrel finished in dull nickel; gun head in black enamel.

Spring-primed; 5000 lbs. pressure.

Nos.	1101A	1103A
Capacity, oz.	9	15
Length head, in.	10⅜	10⅜
Nozzle exten., in.	3⅜	3⅜
Lgth. over all, in.	11⅜	15⅞
Diam. barrel, in.	2¼	2¼
Wt. each, lbs.	3¼	4
Each	$5.00	7.00

UTILITY PUSH-TYPE GUNS



All-Steel

For general industrial lubrication service.

Linpak nozzle for contacting Kleenseal, Hydraulic or Zerk fittings.

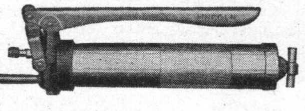
Will handle light or heavy lubricants.

Gun barrel finished in dull nickel.

Spring primed; 5000 lbs. pressure.

	Each
No. 5958—Cap. 5 oz., 1½ in. diam. barrel, 2½ in. nozzle extension, head 6½ in. long, 15 in. long over all when full, 10 3/16 in. when empty; wt. each 1¼ lbs.	$2.70

STANDARD LEVER-TYPE GUNS



All-Steel

With hydraulic extension coupler for Kleenseal, Zerk or Hydraulic fittings.

Ruggedly constructed, designed to provide fast, clean lubrication. Handles light or heavy lubricants. May be force primed by latching follower rod in the follower assembly.

May be filled by suction.

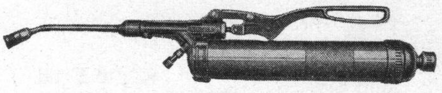
Gun barrel finished in dull nickel, head in black enamel.

10,000 lbs. maximum pressure.

	Each
No. 1043B—Cap. 15 oz., 20⅜ in. long over all, 6 in. extension nozzle; wt. each 5 lbs.	$5.30
No. 1043FB—With No. 80100 filler nipple, otherwise same as No. 1043B	6.15

All above, one in a box.

HEAVY DUTY LEVER-TYPE GUNS



All Steel

Fitted with extension coupler for Kleenseal, Zerk and Hydraulic fittings.

Sturdily constructed of the finest materials throughout, and carefully designed to provide a fast, clean method of lubricating all types of vehicles and machinery.

Equipped with No. 80100 filler nipple.

Barrel finished in dull nickel, head in black enamel.

High Pressure Model

10,000 lbs. maximum pressure.

.04 oz. output per stroke, 1 oz. per 25 strokes using No. 1 cup grease at 70° F.

	Each
No. 1035—Cap. 19 oz., 26 in. long, 6 in. extension nozzle; wt. each 6 lbs.	$17.00
No. 1034—Same as No. 1035 but without nozzle, 19 in. long, ⅛ in. pipe thread female outlet; wt. each 5½ lbs.	15.50

Volume Model

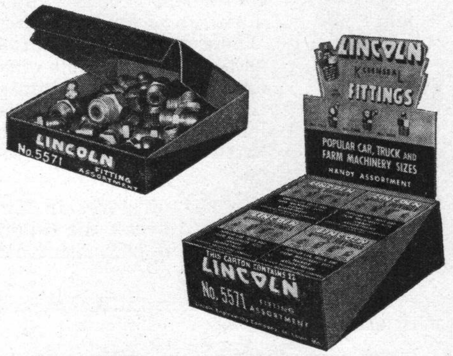
3,000 lbs. maximum pressure.

.11 oz. outlet per stroke, 1 oz. per 9 strokes using No. 1 cup grease at 70° F.

	Each
No. 1037—Cap. 19 oz., 26 in. long, 6 in. extension nozzle; wt. each 6 lbs.	$17.00

One in a box.

SURFACE CHECK FITTINGS



Farm Assortment

A handy grease fitting assortment, including popular sizes for cars, truck and farm machinery.

Twelve No. 5571 fitting assortment boxes (as illustrated) put up in a handsome display carton with built-in die cast display panel.

Contents of No. 5571 Grease Fitting Assortment

20 No. 5000—⅛ in. P.T. Straight fittings
3 No. 5050—¼ in. P.T. Straight fittings
5 No. 5100—⅛ in. P.T. 30° Angle fittings
5 No. 5300—⅛ in. P.T. 67½° Angle fittings

In Display Carton

	Per assortment
No. 5571—Assortment of 33 Lincoln Kleenseal grease fittings; put up in 3½x3¼x¾ in. cardboard box; wt. box ¾ lb.; wt. carton 9 lbs.	$2.85

12 assortments in display carton.

LINCOLN KLEENSEAL LUBRICATING EQUIPMENT

KLEENSEAL, HYDRAULIC OR ZERK FITTINGS

For Use with Grease Guns

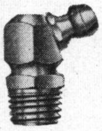
Provide the utmost in bearing protection by having a surface ball-check in the fitting head, flush with the contact opening, which prevents dirt and grit from entering the bearing. Specially designed with an extra large internal diameter and coiled tempered wire spring, these fittings will admit more lubricant flow with less pressure than any other hydraulic or push-type fitting.

⅛ in. Pipe Thread, Straight

No.	5000
Length, in.	23/32
Wt. per 100, lbs.	1 5/16
Per 100	$6.60

5100

5200



5300

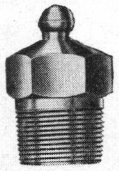
5400

⅛ in. Pipe Thread, Elbow

Nos.	Per 100	Elbow, deg.	Lgth., in.	Wt. per 100, lbs.
5100	$13.00	30	1 3/32	2½
5200	13.00	45	1 1/32	2½
5300	13.00	67½	29/32	2½
5400	13.00	90	27/32	2 9/16

5050

5350



5055

Nos.	Per 100	Length, in.	Wt. per 100, lbs.
⅛ in. Pipe Thread, Straight			
5050	$16.35	15/16	4
¼ in. Pipe Thread, 67½° Elbow			
5350	$21.60	1 5/32	5
⅜ in. Pipe Thread, Straight			
5055	$33.40	1 3/16	7½

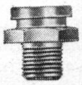
STANDARD BUTTON HEAD FITTINGS

Provide volume flow of lubricant without restriction.

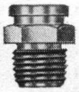
Machined from steel bar stock, cadmium plated, and hardened to withstand wear encountered on heavy equipment.

When screwed into bearing parts, they protrude only slightly and are not rapidly damaged.

Head diameter ⅝ in.



5700



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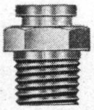
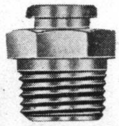


5710



5715

Male Pipe Thread

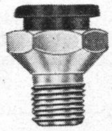
Nos.	Per 100	Thread, in.	Lgth., in.	Wt. per 100, lbs.
5700	$14.30	⅛	25/32	3¾
5705	16.40	¼	53/64	4¾
5710	21.90	⅜	63/64	8½
5715	31.80	½	1	13

LARGE BUTTON HEAD FITTINGS

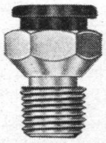
Unexcelled where volume delivery of lubricant is required. The head proper is machined in one piece and presents a smooth face for contact with the coupler.

Check valve is designed to permit a maximum flow of lubricant with the least restriction. A long guide stem assures positive closing. When closed, check valve end is flush with face of fitting, preventing wear or cutting of the coupler sealing package.

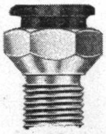
Cadmium plated; head diameter ⅞ in.



5750



5755



5781

Male Thread

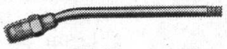
Nos.	Per 100	Thread, in.	Lgth., in.	Wt. per 100, lbs.
5750	$36.80	¼ PT	1 7/32	11¼
5755	38.30	⅜ PT	1 9/32	12½
5781	36.80	⅝-18	1 9/32	12½

HYDRAULIC COUPLERS

For contacting Kleenseal, Hydraulic and Zerk fittings. Inlet ⅛ in. pipe thread female. Jaws within coupler, actuated by lubricant pressure, grip the fitting, forming a tight seal. Coupler jaws are reversible, providing double service life.

	Each
No. 5845—Wt. each 2 oz.	$0.80

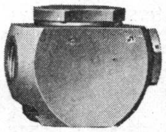
EXTENSION ADAPTERS



Includes No. 5845 coupler described above and a 6 in. extension tube. ⅛ in. pipe thread male connection.

	Each
No. 5834—Wt. each 5 oz.	$1.15

STANDARD BUTTON HEAD COUPLERS



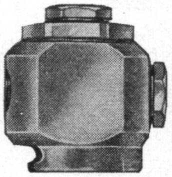
Two-Way

For pull-on or push-on service.

Inlet has 7/16-27 female thread.

	Each
No. 81458—Wt. each 5 oz.	$2.60

LARGE BUTTON HEAD COUPLERS



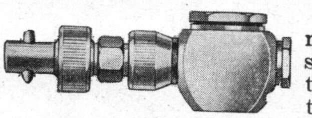
Three-Way

For pull-on or push-on service.

Inlet has 7/16-27 female thread.

	Each
No. 80933 — Wt. each 8 oz.	$3.75

BUTTON HEAD COUPLING ADAPTERS



For connecting standard button head fittings with a pin-type coupler.

	Each
No. 81709—Wt. each 5 oz.	$3.00
No. 81710—Same as above except for large button head fittings; wt. each 10 oz.	4.00

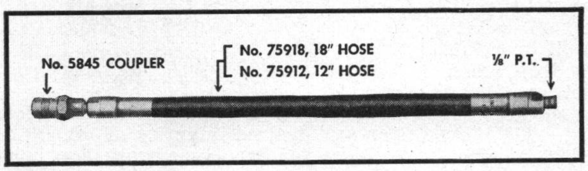
WHIP HOSE ASSEMBLIES

For Use with Standard and Heavy Duty Lever Guns

Oil-resisting flexible hose, 3/16 in. ID, with ⅛ in. PT male fittings. Will withstand 10,000 lbs. pressure.

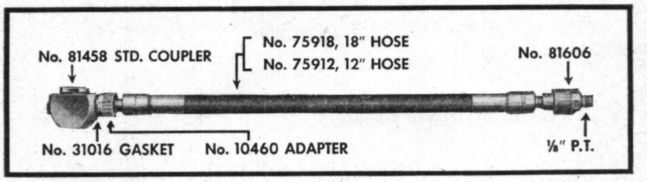
Centers Only

	Each
No. 75912—12 in. long; wt. each 6½ oz.	$2.90
No. 75918—18 in. long; wt. each 8 oz.	3.35



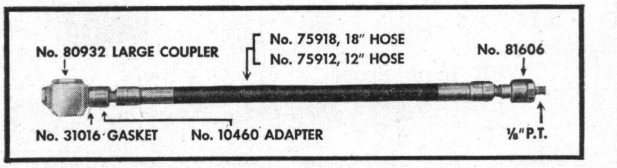
With Hydraulic Coupler

	Each
No. 81725—18 in. hose; wt. each 8 oz.	$4.00
No. 81726—12 in. hose; wt. each 7 oz.	3.60



With Standard Button Head Coupler

	Each
No. 3033—18 in. hose; wt. each 1 lb.	$7.35



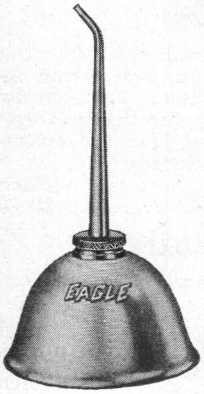
With Large Button Head Coupler

	Each
No. 3029—12 in. hose; wt. each 1 lb.	$7.85

All above, open stock.

OILERS

EAGLE WELDED STEEL BENCH



One-Piece Seamless Steel, Highly Polished and Lacquered

Carbon steel bottom welded to body; welded **spout fitted with solid brass bushing;** brass bushing in body; machine cut threads; tested under air pressure. Reinforced insert type spout.

Spouts interchangeable on all sizes.

Made to withstand unusual abuse and to give dependable service over a long period.

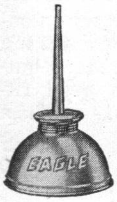
With Bent Spout

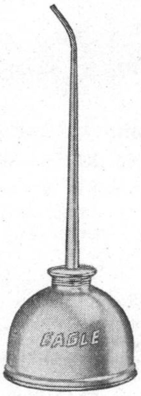
Nos.	Per dozen	Cap., pts.	Lgth. spout, in.	Diam. bottom, in.	Wt. doz., lbs.
2006	$ 7.80	½	6	3⅜	4¼
3006	9.00	½	6	3¾	4¾
4006	10.20	¾	6	4⅛	5½
4009	10.80	¾	9	4⅛	5⅞
5006	11.40	1	6	4½	6⅜
5009	12.00	1	9	4½	6¾

One dozen in a carton.

Note—The above can be furnished with straight spout when so ordered.

EAGLE STEEL BENCH





Copperite Finish

Bodies drawn seamless from high grade cold rolled steel.

Spring steel bottoms double seamed to bodies. Precision rolled threads that insure perfect fit.

1⅜ in. wide mouth openings. Reinforced insert type spouts, all sizes interchangeable.

With Straight Spout

Nos.	Per dozen	Cap., pts.	Lgth. spout, in.	Diam. bottom, in.	Wt. doz., lbs.
133C	$3.00	⅓	3	3½	2¾
143C	3.90	½	3	4	4
145C	4.20	½	5	4	4¼
155C	5.10	1	5	4 5/16	5¼

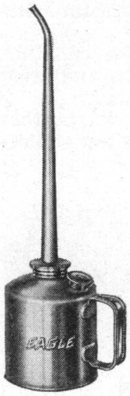
With Bent Spout

Nos.	Per dozen	Cap., pts.	Lgth. spout, in.	Diam. bottom, in.	Wt. doz., lbs.
149C	$4.50	½	9	4	4½
159C	5.40	1	9	4 5/16	5½

One dozen in a carton.

OILERS

EAGLE RAILROAD



Extra Heavy Pattern; Copperite Finish

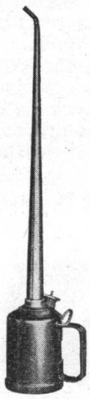
Seamless drawn steel body; double seamed bottom; seamless welded steel reinforced insert type spout; 1 in. filler opening with vent cap; reinforced handle welded to body. Bent spout.

Used by engineers and mechanics and in mines, mills, factories, foundries, machine shop, etc.

Nos.	**101**	**11 1**
Capacity, qts.	1	2
Length spout, in.	10½	14½
Diameter, in.	4¼	5¼
Ht. over all, in.	16	20⅜
Wt. dozen, lbs.	14	20
Per dozen	$22.50	27.60

One-half dozen in a carton.

EAGLE WELDED STEEL VALVE



Seamless Drawn Steel Body

Bottom welded to body and reinforced with a 16 ga. steel band, ½ in. wide. Seamless welded steel spout reinforced at base by a 16 ga. flanged collar on the outside, and on the inside by a heavy steel thimble clinched to body.

Positive working valve 6½ in. from end of spout. Operator has instant control of flow of oil by means of a thumb lever which operates the check valve.

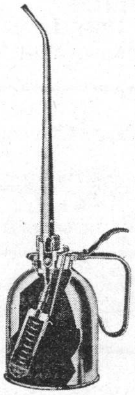
Rust and oil-proof black enamel finish.

Per dozen

No. 400—Cap. 1 qt. 22½ in. spout, 4¼ in. diam. body, 1 in. filler opening, 28 in. high over all; wt. dozen 23 lbs. $33.60

One dozen in a carton.

EAGLE HYDRAULIC PUMP



Copperite Finish

Seamless drawn steel body; double seamed bottom.

Detachable welded steel spout. Brass coupling with machine-cut threads. Machined and ground brass plunger. Ball valve. One-piece handle.

Solid brass hydraulic pump is absolutely positive in action.

Will deliver oil in a full stream or one drop when held in any position.

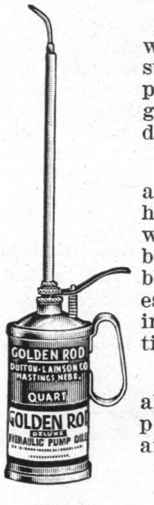
With upright spout.

Nos.	**27**	**28**	**29**
Capacity, pts.	¾	1	2
Lgth. spout, in.	6	9	9
Diam., in.	3	3⅝	4¼
Ht. over all, in.	10½	14¼	15½
Wt. doz., lbs.	11¼	15½	18½
Per dozen	$16.00	22.80	25.20

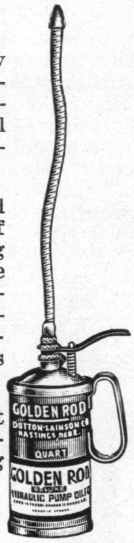
One-half dozen in a carton.

OILERS

GOLDEN ROD HYDRAULIC PUMP



Standard spout



Flexible spout

Extra heavy welded steel construction; one-piece natural grip steel handle.

Standard and angle spouts of heavy tubing with detachable brass tip. Flexible spout of finest quality tubing with brass tip.

Precision-built all metal rustproof pumping arrangement.

Handles any oil that flows and pumps oil when held in any position. Delivers a drop at a time or a full stream as desired.

Easily taken apart for cleaning or repairing.

Brilliant yellow baked enamel finish and attractive label.

With Standard Spout Each

No. 120-C1—Cap. 1 pt., 8 in. spout, 3½ in. diam. base; wt. per carton 10 lbs. $2.50

Six in a carton.

With Angle Spout

Nos.	**120-C2**	**120-A2**
Cap., pts.	1	2
Spout, in.	8	12
Diam. base, in.	3½	3½
Wt. carton, lbs.	10	13
Each	$2.55	3.00

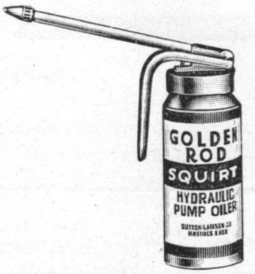
Six in a carton.

With Flexible Spout Each

No. 120-C3—Cap. 1 pt., 10 in. spout, 3½ in. diam. base; wt. per carton 10 lbs. $2.60

Six in a carton.

"SQUIRT" PUMP



Precision made. Easy, accurate control for any desired quantity of oil.

Ideal for the home workshop, machine shop, etc.

Natural hand grip, durable lacquer finish.

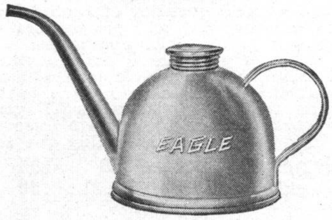
Each

No. 100—Cap. 5 oz., 4½ in. spout; wt. carton 3 lbs. $1.35

Six in a carton.

ENGINEERS' FILLERS

EAGLE



Copperite Finish

Seamless drawn steel body; double seamed bottom; welded handle and spout. Wide mouth filler opening; heavy rolled threads on cap.

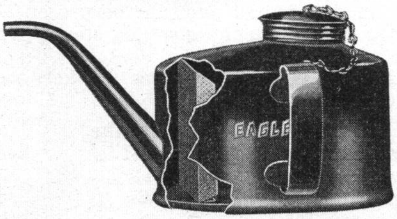
Per dozen

No. 210—Cap. 1 qt., 6⅞ in. spout with ¼ in. opening, 5½ in. drain, 4¾ in. high to top of collar; wt. per dozen 13 lbs. . . **$21.75**

One-half dozen in a carton.

TALLOW POTS

EAGLE WELDED STEEL



With Side Handle and Strainer

One-piece seamless steel body, black enamel finish. Solderless, leak proof and unaffected by heat. Handle and seamless steel spout welded to body; 2½ in. filler opening with cap chained to handle.

Used in mines, mills, factories and foundries for filling sight, feed oilers, large oil cups, etc.

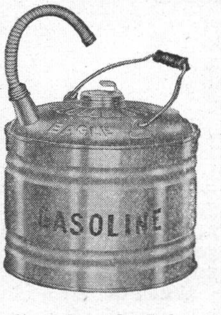
Per dozen

No. 40-SH—Cap. 2 qts., 6⅞ in. spout with ⅜ in. opening, 5¼x 7½ in. wide at bottom; 6½ in. high over all; wt. per dozen 18 lbs. **$26.40**

Open stock.

GASOLINE CANS

EAGLE FLEXIBLE SPOUT



Galvanized Steel

A practical filler for tractor owners, contractors, etc. Flexible spout eliminates the need of funnels and reaches those inaccessible points.

Wide mouth filler; clip-cap, easy on, easy off, easy vented. Holds flexible spout when detached from can.

Enameled red and stenciled "Gasoline."

Nos.	M-1	M-2	M-5
Cap., gals.	1	2	5
Spout, in.	9	9	9
Diam. can, in.	11⅛	11⅛	11⅛
Ht. over all, in.	10	11¾	15¾
No. in carton	12	6	4
Wt. dozen, lbs.	25	38	67
Per dozen	$18.80	22.70	31.30

GASOLINE CANS

EAGLE WELDED STEEL

EAGLE
DURABLE WELDED STEEL

Seamless Drawn Steel Body

The most satisfactory gasoline can for highway departments, tractors and combine owners, public-service crews, contractors, etc.

Stand up longer under hard usage.

Body of can drawn from one-piece 24 gauge high grade steel. Body and breast are welded together electrically under electronic control. Bottom reinforced with heavy steel hoop. Spout and ears welded on; heavy bail with wood grip. Hexagon easy-grip cap; 2¼ in. filler opening.

Red Enameled

Nos.	61R	62R	65R
Cap., gals.	1	2	5
Length spout, in.	2	2	2½
Diam. can, in.	6½	8⅞	11¼
Ht. over all, in.	10	11¼	15½
No. in carton	12	6	4
Wt. dozen, lbs.	29	45	84
Per dozen	$26.40	30.00	48.00

OIL CANS

EAGLE WELDED STEEL

Blue Enameled

Otherwise identical with Gasoline cans described above.

Nos.	61B	62B	65B
Cap., gals.	1	2	5
Length spout, in.	2	2	2½
Diam. can, in.	6½	8⅞	11¼
Ht. over all, in.	10	11¼	15½
No. in carton	12	6	4
Wt. dozen, lbs.	29	45	84
Per dozen	$26.40	30.00	48.00

SUPPLY CANS

EAGLE WELDED STEEL

Black Enameled

Otherwise identical with Gasoline cans described above.

The most dependable storage cans for railroads, mines, mills, factories and foundries for use with oil and other liquids.

Will outwear many ordinary cans.

Nos.	61	62	65
Cap., gals.	1	2	5
Length spout, in.	2	2	2½
Diam. can, in.	6½	8⅞	11¼
Ht. over all, in.	10	11¼	15½
No. in carton	12	6	4
Wt. dozen, lbs.	29	45	84
Per dozen	$26.40	30.00	48.00

SAFETY FILLING CANS

JUSTRITE

Red Enameled

For handling and storing explosive or inflammable liquids, corrosive chemicals and certain cleaning compounds.

Pouring lip cast on outer rim of nozzle where liquid is poured from can — permits pouring directly into a small opening—no loss from spilling. Spout cap controlled by a strong, non-rusting spring which holds cap closed tight, preventing leakage and evaporation—if can is exposed to extreme heat, this spring permits excessive gas pressure to escape and automatically closes cap when pressure is relieved.

Nos. 2, 3 and 5 gal.

Heavy lead coated steel body.

Double seamed and soldered. Bottoms on 2 and 5 gallon sizes are reinforced by a steel ring. Nozzle and handle is malleable iron, electrically tinned.

High-gloss red enamel is baked-on.

Approved, inspected and individually numbered and labeled by Underwriters' Laboratories, Inc. Approved by Associated Factory Mutual Fire Insurance Companies, and so stamped.

With "Trigger" Handle

Nos.	Each	Cap.	Diam., in.	Ht., in.	Wt. ea., lbs.
1000	$4.40	1 pt.	4⅝	6¾	2⅛
1010	4.40	1 qt.	4⅝	8¼	2¼
1020	5.40	½ gal.	7¼	8⅜	3
1030	5.60	1 gal.	7¼	11½	4

With "Swinging" Handle

Nos.	Each	Cap.	Diam., in.	Ht., in.	wt. ea., lbs.
1040	$6.80	2 gal.	9⅜	12⅝	7
1050	7.40	3 gal.	9⅜	16⅛	8
1060	8.40	5 gal.	11½	17	9

Nos. 1010 to 1030, six; Nos. 1040 to 1060, one in a carton.

OILY WASTE CANS

JUSTRITE

No 3
JUSTRITE
OILY WASTE CAN
EMPTY EVERY NIGHT

With Foot Lever

24 gauge galvanized steel body.

22 gauge galvanized steel cover. ⅛ inch band iron legs and handle.

The can is double seamed and soldered.

Approved and labeled.

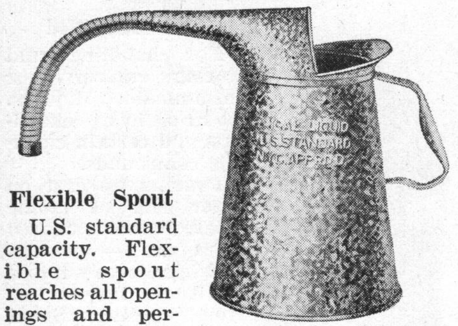
Legs 4 in. high.

Nos.	Each	Cap., gals.	Size, in.	Wt. ea., lbs.
9-1	$ 8.00	6	11¾x13	14
9-2	8.80	8	12½x14	15
9-3	10.00	10	13½x15	17
9-5	11.80	14	15½x17	21
9-7	19.80	25	19 x20½	26

Open stock.

LIQUID MEASURES

GALVANIZED STEEL



Flexible Spout

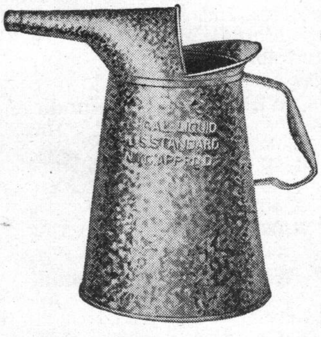
U.S. standard capacity. Flexible spout reaches all openings and permits complete drainage. Back collar prevents spilling.

Hot dipped galvanized. Double rolled bottom seam. Comfortable hand fitting handle.

Nos.	Per dozen	Cap., qts.	Diam., in.	Ht., in.	Wt. dozen, lbs.
1	$24.10	1	4¼	7¼	10
2	28.05	2	5⅜	9	14
4	31.60	4	7	11⅜	21½

Nos. 1 and 2, one dozen; No. 4, one-half dozen in a box.

UTILITY, GALVANIZED STEEL



Straight Top Funnel Attachment

U.S. standard capacity.

Permits complete draining and enables user to get into out-of-the-way places.

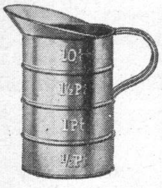
Heavy body and bottom; solid lip all around, hand fitting steel handle.

Nos.	Per dozen	Cap., qts.	Wt. dozen, lbs.
384	$18.45	1	10
385	21.90	2	13½
386	24.85	4	21½

Nos. 384 and 385, one dozen; No. 386, one-half dozen in a box.

GRADUATED MEASURES

TIN



Embossed Graduations

IC tin; well formed pouring lip; firmly attached handle has beaded edge.

Graduated by ½ pints.

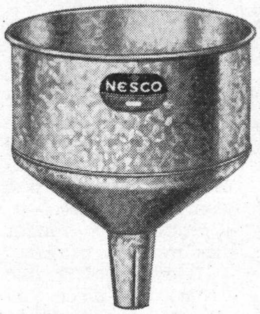
Per dozen

No. 63—Cap. 1 qt., 4½x4½ in.; wt. per dozen 4 lbs. $3.20

Three dozen in a carton.

FUNNELS

TRACTOR, GALVANIZED STEEL



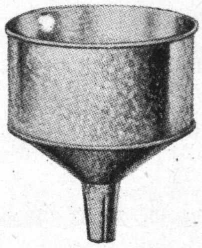
Removable Brass Wire Strainer

Extra deep bowl; seamless cone; and long fluted spout. Heavy wire top bead; double seamed; hot dipped galvanized.

Per dozen

No. 61—10⅛ in. diam., 12⅜ in. high, bowl 7⅝ in. deep; wt. per dozen 34 lbs. $23.40

One-quarter dozen in a carton.



Fixed Brass Wire Strainer

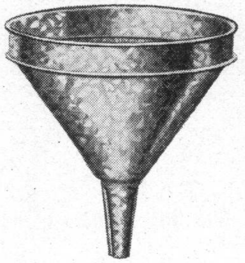
A large heavy duty funnel with extra deep bowl double seamed to spout. Sturdy top wire; hot dip galvanized.

Per dozen

No. 51—12 in. diam., 15⅛ in. high, bowl 10¾ in. deep; wt. per dozen 33 lbs. $35.05

One-half dozen in a carton.

STANDARD, GALVANIZED STEEL



Built-in Brass Wire Strainer

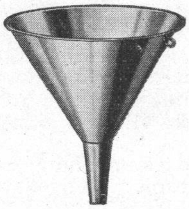
Rim on bowl prevents overflow. Heavy wire rolled in top edge. Fluted spout prevents air binding. Hot dip galvanized.

Per dozen

No. 31—9⅝ in. diam., 10 in. high, bowl 6⅝ in. deep; wt. per dozen 17 lbs. $22.80

One-half dozen in a carton.

TIN



Nestable

IC tin with spout tightly seamed to bowl.

Nos.	Per dozen	Trade cap.	Size, in.	Wt. dozen, lbs.
10	$1.00	¼ pt.	2 11/16	¾
20	1.16	1 pt.	4⅜	1¾
25	1.30	1 qt.	5⅝	2⅜
30	1.44	2 qts.	6½	2¾
35	2.04	4 qts.	7⅝	4

Three dozen in a carton.

BOILER GRAPHITE

DIXON'S PIONEER

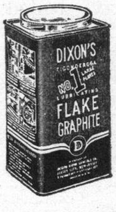
Feeding a small quantity of Boiler Graphite into boilers every day will prevent scale from burning fast to the shell and tubes.

The action of graphite is not chemical, nor does it attack metal; neither is it affected by any acids in the water or by the heat generated in the boiler. Particles of graphite simply work through the minute fissures existing in the old scale, loosening the scale.

Size drums, lbs.	50	100	200
Per pound	$0.31	.30	.29

LUBRICATING GRAPHITE

DIXON'S TICONDEROGA



Indispensable for lubricating every kind of mechanical movement.

Used as directed it will maintain valves, pistons and cylinder walls of steam compressor and gas engines in perfect condition, by providing a graphite veneer over all the fricton parts, thus reducing wear and eliminating power losses.

Its use very materially reduces the amount of oil required for cylinder lubrication. It will not pack in the presence of oil or water and thereby clog steam parts, etc.

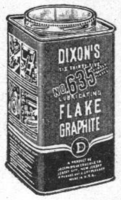
Also used for coating gaskets and packing.

No. 1—Large Flake

Size, Nos.	632-1	633-1
Size cans, lbs.	1	5
Cans in case	36	8
Wt. case, lbs.	48	44
Per pound	$1.00	.90

No. 2—Medium Powdered Flake

Size, Nos.	632-2	633-2
Size cans, lbs.	1	5
Cans in case	36	8
Wt. case, lbs.	48	44
Per pound	$1.00	.90



Finely Powdered

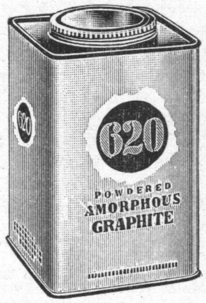
Processed specially for service requiring minute but not microscopic particle size.

Used dry or as a lubricating additive in oils, greases and other substances for long lasting lubrication.

Extremely pure unctuous.

No. 635

Size can, lbs.	1	5
Cans in case	36	8
Wt. case, lbs.	48	45
Per pound	$1.40	1.30



Amorphous

About 325 mesh. Soft, adhesive and gritless. Much more adhesive than flake graphite and will not rub off.

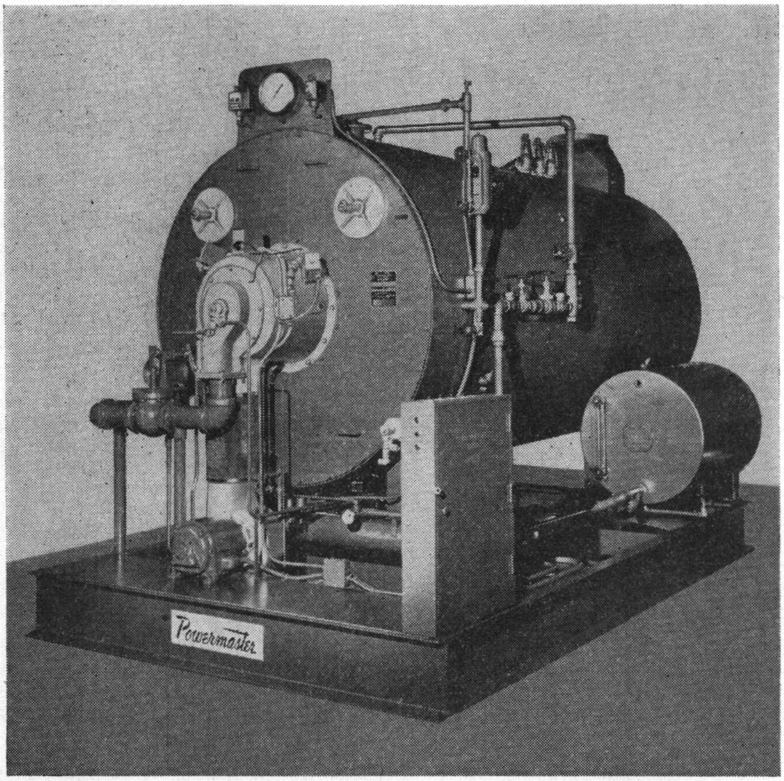
When properly mixed with oil it can be fed through a lubricator.

Size cans, lbs.	1	5
Cans in case	36	8
Wt. case, lbs.	48	45
Per pound	$0.60	.52

Size drums, lbs.	25
Per pound	$0.38

STEAM BOILERS

ORR & SEMBLOWER "POWERMASTER" AUTOMATIC STEAM GENERATOR



A Completely Equipped Steam Plant

Boiler, burner, feed water system, controls and all accessories are assembled into a single unit on a rugged steel base.

Each part is selected and sized to suit all other parts. Each Powermaster is co-ordinated and tested at the factory so that it operates automatically, smoothly and efficiently.

Typical Powermaster operating efficiencies are 80-82%, second to none in the boiler field.

Powermasters are manufactured in a full range of sizes from 15 to 500 boiler horsepower. Allowable steam working pressures range from 15 to 150 lb. per square inch.

Outstanding Features

Fuel bills are low—ASME tests indicate that the fuel-to-steam efficiency is just as high when the unit is operating at 30% of rating as at full load.

Operation is fully automatic—Powermasters start at the click of a switch. The units require about one-tenth the man hours needed to operate and maintain old style boilers.

Fuel choice is flexible—Operates at high efficiency on light oil or heavy oil or gas. A Powermaster owner need not be dependent on only one type of fuel.

Boiler room stays clean—Piped-in oil or gas serves to keep the boiler room clean. No soot or ashes.

No smoke from stack—Powermaster's operation is smokeless—a big help in your plant's effort to earn the goodwill of your community.

Boiler care is simplified—The swinging rear cover, removable front cover, ample handholes and three blow-down connections make water side and fire side easy to keep in proper condition.

Installation costs are low—Requires no piping other than connections to service lines. It requires no insulation or lagging installation by the owner. It rests on its own base. The only stack necessary is a simple "stove pipe."

Space is saved—The Powermaster is compact. It takes only about half the space needed by old-style boilers.

Design and Construction

The boiler is a 3-pass modernized Scotch type. Heat from the burner travels back and forth three times the length of the boiler, and is transferred effectively from flame to water. Burner is engineered for simplicity and for quick changeover from one fuel to another.

Blower operates quietly on forced draft principle. Water lever control automatically maintains proper water level in the boiler. Control panel contains all the controls which make this steam generator fully automatic.

Free-swinging rear cover makes tubes quickly accessible. Steel base is part of the unit, eliminating expense of building a brick foundation. Divided front cover makes it possible to remove front cover without disturbing burner.

Condensate return system includes condensate tank, float operated valve, and feed water pump mounted on base (optional with low pressure steam generator). Flame safety controls for added safety. High-low fire control of flame-volume maintains steady pressure as steam demand varies.

Boiler, HP	Steam output, lbs. per hr.	*Model 3LG 125 PSI, each	Approx. dimensions						Fuel Consumption at 100% Rating			Net wt. each, lbs.
			Length, ft.	Length, in.	Width, ft.	Width, in.	Height, ft.	Height, in.	No. 2 oil, GPH	No. 6 oil, GPH	Gas 1000 Btu per hr.	
15	517	$ 2640.00	7	0	3	7	5	4	4.8	.....	645	2700
20	690	2830.00	7	11	3	7	5	4	6.4	.....	860	3000
30	1035	3560.00	8	9	4	0	6	2	9.6	.....	1290	3900
40	1380	4670.00	10	3	4	8	6	9	12.8	11.5	1720	6550
50	1725	5300.00	11	8	4	8	6	9	16.0	14.4	2150	6850
60	2070	5900.00	10	6	5	8	7	4	19.2	17.3	2580	8200
70	2415	6500.00	11	6	5	8	7	4	22.4	20.2	3010	9900
80	2760	7100.00	11	9	6	1	8	1	25.6	23.0	3440	11000
100	3450	8170.00	11	3	6	6	8	8	32.0	28.8	4300	13000
125	4312	9400.00	13	1	6	6	8	8	40.0	36.0	5375	14500
150	5175	10450.00	14	7	7	11	9	5	48.0	43.2	6450	18700
200	6900	12600.00	16	7	7	11	9	6	64.0	57.6	8600	23500
250	8624	POR	15	7	8	0	9	11	80.0	72.0	10750	28100
300	10350	POR	17	5	8	0	9	11	96.0	86.4	12900	31000
400	13800	POR	18	3	9	0	10	11	128.0	115.2	17200	35750
500	17250	POR	19	0	9	6	11	8	160.0	144.0	21500	42100

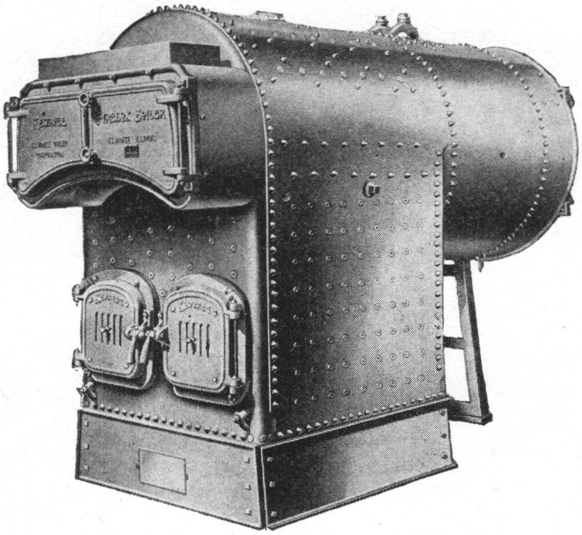
*Prices vary with type of fuel, design, pressure and accessory equipment.

Prices on larger sizes on application.

Tell Us Your Requirements and We Will Furnish Complete Data and Prices

STEEL BOILERS

KEWANEE HIGH PRESSURE



"500" Series Heavy Duty Firebox

A rugged, dependable riveted boiler for steam working pressures of 100, 125, 150 lbs.

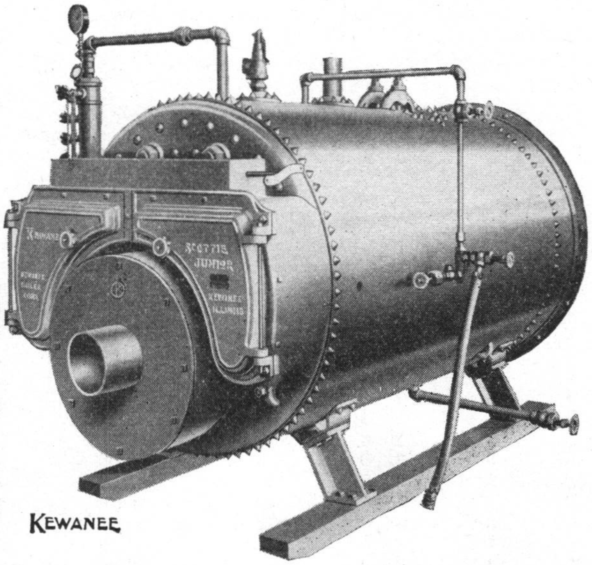
Two-pass, 3 in. tubes save floor space and give extra economies even with overloads 50% above the 25 to 304 horsepower ratings whether fired by hand or mechanically.

The high firebox, long travel of gases, unimpeded waterways and generous steam space, all contribute to the unusually high efficiency of this outstanding boiler.

Furnished with steam trimmings and all necessary equipment for hand-firing or mechanical-firing as desired.

Complete Specification Data and Prices on Request

KEWANEE "SCOTTIE JUNIOR" HIGH PRESSURE, PORTABLE



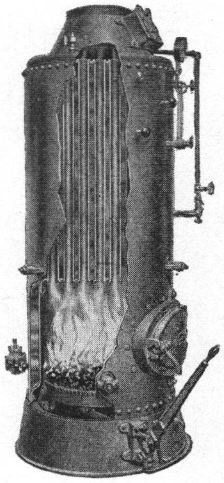
A portable adaptation of the Scotch Marine Boiler for working pressures up to 125 lbs. An exceedingly popular and useful boiler. Truly trouble-free and easy to handle, with every part accessible.

Economical in operation with coal, oil or gas. Six sizes 6 to 36 HP.

Complete Specifications and Prices on Request

VERTICAL TUBULAR BOILERS

LOOKOUT



Full Length Tubes; Shaking Grate Bars

Built in accordance with the ASME Boiler Code.

For use where high pressure steam is required, in garages, laundries, dry cleaners, creameries, etc.

Working Pressure—Built for a safe working pressure of 100 lbs. and tested and made tight under a hydrostatic pressure of 150 lbs.

Material—Shells and head fabricated from steel plate of 55,000 pounds tensile strength. The steel tubes are tested at will under a pressure of 1000 lbs. per square inch.

Base—Boilers 36 in. in diameter and smaller have separate metal base enclosing ashpit. Larger boilers have shell extended forming base and ashpit.

Grates—Shaking grates, without any pins or bolts on the inside of the boiler; can be inserted or removed through the fire door opening.

Fire Door—Cast iron frame, door and liner; with automatic self-locking gravity type safety latch.

Stack Hood—A Stack Hood is furnished to be placed on the upper head over the top of the tube openings. The hood is equipped with a hinged inspection door for periodic examination and cleaning of the top tube sheet. The top outlet of the stack hood forms a base for the stack.

Handholes—Handhole openings, equipped with plates, arches and gaskets are placed in the shell of the boiler at the lower tube sheet and in line with fusible plug.

Safety Plug—Inserted in tube, opposite a handhole plate, at low water level.

Steam Supply—Opening in top of head or tube sheet.

Injector—For supplying the boiler with water when under pressure an injector is connected to the boiler with necessary valves, pipe and fittings.

Equipment—Regular equipment when furnished consists of a separate or shell extended base with ash pit door; lever operated locomotive type shaking grate assembly; firing door assembly; stack hood assembly; handhole opening assemblies; steam pressure gauge with syphon and cock; water gauge with glass and guard rods; compression gauge cocks; spring loaded safety valve; brass fusible safety plug; blow-off cock and connecting nipple; cock for connecting inspector's test gauge; and injector together with necessary piping, fittings, and valves for connecting to boiler.

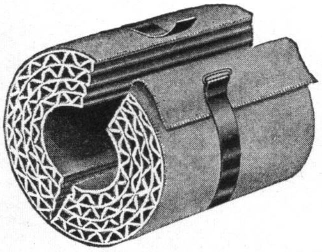
Boiler HP	Each	Boiler Diam., in.	Boiler Height, in.	Firebox Diam., in.	Firebox Height, in.	Ship. wt. each, lbs.
3	$ 241.00	20	65	16	20	700
5	308.00	24	77	20	25	1050
6	331.00	24	89	20	25	1150
10	452.00	30	91	24	27	1700
12	482.00	30	105	24	27	2000
15	583.00	36	99	30	27	2400
20	653.00	36	117	30	27	2900
25	816.00	42	112	36	29	3650
30	889.00	42	124	36	29	4000
40	1249.00	48	133	42	32	5100
50	1366.00	48	151	42	32	5700

Note—This boiler also available for oil or gas firing.

Note—Vertical Tubeless boilers, for coal firing are available in a full range of sizes. Complete specifications and prices on request.

PIPE COVERING

AIR CELL



For Hot Water and Low Pressure Steam Lines, 100°-300° F.

Low cost construction of alternate layers of plain and corrugated asbestos paper, forming, when placed upon the pipe, successive layers of continuous dead air cells, making a light, durable and effective insulation. Air cell has approximately 75% insulating efficiency of 85% magnesia.

In 3 foot sections.

Sections are cut in half lengthwise and furnished with cotton duck jackets and metal bands.

In Cartons

For pipe, in.	Per foot	3-Ply ¾ in. thick Sect. in ctn.	3-Ply ¾ in. thick Wt. ctn., lbs.	4-Ply 1 in. thick Sect. in ctn.	4-Ply 1 in. thick Wt. ctn., lbs.
½	$0.22	42	55	30	53
¾	.24	35	47	28	55
1	.27	30	44	23	47
1¼	.30	24	38	18	39
1½	.33	20	37	15	35
2	.36	15	34	12	34
2½	.40	12	32	11	35
3	.45	9	28	8	29
3½	.50	8	27	6	25
4	.60	6	25	6	28
5	.70	5	24	4	25
6	.80	4	31	4	26½

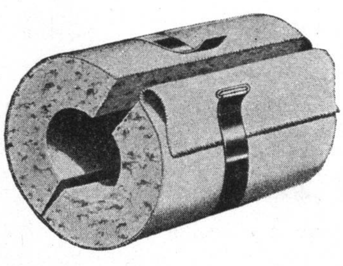
In Crates

For pipe, in.	Per foot	4-ply, 1 in. thick Sections in crate	Wt. crate, lbs.
8	$1.10	8	114
10	1.30	6	108

Note—Each thickness takes a different discount.

PIPE COVERING

85% MAGNESIA



For High and Medium Pressure Steam Lines, 200°-550° F.

A medium cost, molded composition of not less than 85% basic carbonate of magnesia and approximately 15% asbestos fibre. Fire proof; very durable; will not deteriorate. 85% magnesia has approximately 33% more insulating efficiency than air cell.

In 3 foot sections.

Cut in half lengthwise and furnished with canvas jackets and metal bands.

Standard Thickness, in Cartons

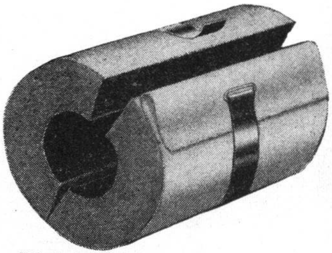
For pipe, in.	Per foot	Thickness, in.	Sections in carton	Wt. ctn., lbs.
½	$0.22	⅞	36	59
¾	.24	⅞	30	56
1	.27	⅞	25	53
1¼	.30	⅞	20	51
1½	.33	⅞	30	79
2	.36	1 1/32	20	77
2½	.40	1 1/32	16	71
3	.45	1 1/32	13	65
3½	.50	1 1/32	10	58
4	.60	1⅛	9	64
5	.70	1⅛	6	52
6	.80	1⅛	5	48

Standard Thickness, in Crates

For pipe, in.	Per foot	Thickness, in.	Sections in crate	Wt. crate, lbs.
8	$1.10	1¼	8	170
10	1.30	1¼	5	146
12	1.85	1¼	4	157

PIPE COVERING

WOOL FELT



For Hot or Cold Water Service

Has same insulating efficiency as 85% magnesia, but may be used on cold water as well as hot water service. Slightly higher in price than 85% magnesia covering.

Gives fair results in preventing non-sweat and freezing.

Made of laminations of wool felt with a waterproof liner.

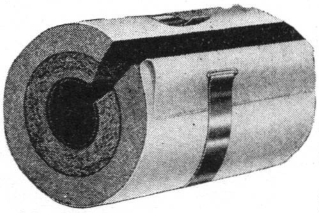
In 3 ft. sections.

Cut in half lengthwise and furnished with cotton duck jackets and metal bands.

In Cartons

For pipe, in.	Per foot	¾ in. thick Sect. in ctn.	¾ in. thick Wt. ctn., lbs.	1 in. thick Sect. in ctn.	1 in. thick Wt. ctn., lbs.
½	$0.22	42	56	30	56
¾	.24	35	51	28	55
1	.27	30	50	23	51
1¼	.30	24	46	18	42
1½	.33	20	43	15	40
2	.36	15	35	12	36
2½	.40	12	32	11	40
3	.45	9	30	8	34
3½	.50	8	29	6	30
4	.60	6	24	6	32

ANTI-FREEZE



To Prevent Freezing of Cold Water Pipes

Consists of an inner layer of hair felt with a waterproof felt liner and an outer layer of wool felt. Total thickness 1 inch. For severe conditions double thickness should be used. For example: a 1 in. thickness of Anti-Freeze will protect a 1 in. pipe for 1 hour at 10° below zero if the water is not running. 2 in. of Anti-Freeze will protect for 2 hours.

In 3 ft. sections.

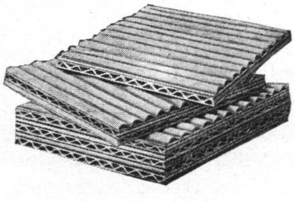
Cut in half lengthwise and furnished with cotton duck jackets and metal bands.

In Cartons

For pipe, in.	Per foot	Sections in ctn.	Wt. carton, lbs.
½	$0.22	30	41
¾	.24	28	41
1	.27	23	44
1¼	.30	18	46
1½	.33	15	41

BLOCK INSULATION

AIR CELL



For Temperatures 100°-300° F.

Particularly applicable for the insulation of low pressure boilers, feed water heaters, dry rooms, ovens, warm air ducts, boiler room ceilings, partitions, etc.

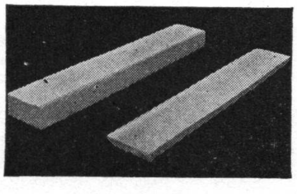
Same construction and efficiency as Air Cell Pipe Covering above.

6x36 in. Blocks

No. of plies	3	4
Thickness, in.	¾	1
Blocks per carton	48	36
Square feet per carton	72	54
Wt. per carton, lbs.	57	57
Per square foot	$0.27	.30

BLOCK INSULATION

85% MAGNESIA



For Temperatures 200°-550° F.

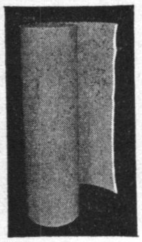
For boilers, locomotive lagging, etc.

Same construction and efficiency as 85% Magnesia Pipe Covering above.

6x36 in. Blocks

Thickness, in.	1	1¼	1½	2
Blocks per carton	24	20	16	12
Square feet per carton	36	30	24	18
Wt. per carton, lbs.	52	54	53	52
Per square foot	$0.30	.38	.45	.60

ASBESTOS PAPER



Made of best asbestos. For fire proofing, lining of doors, partitions, etc.

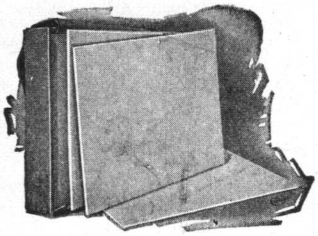
Also for packings, fire screens, lining of ranges, etc.

36 Inches Wide

Wt. per 100 sq. ft., lbs.	Per 100 pounds	Thickness, in.
10	$18.00	.022
16	18.00	1/32
32	18.00	1/16
64	20.00	⅛

Fifty pounds in a roll.

ASBESTOS MILLBOARD

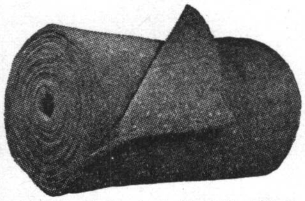


Standard grade asbestos millboard. For general use where board is desired for protection against fire, heat, acid fumes, etc.

42x48 Inch Sheets

Thickness, in.	Per sheet	Wt. sheet, lbs.
1/16	$1.50	3.85
⅛	1.95	6.93
3/16	2.85	10.35
¼	3.80	14.01
⅜	5.50	20.28
½	6.90	26.53

HAIR FELT



100% Selected Cattle Hair

For frost proof wrapping on cold water pipes also for cold storage insulation, protection for gas pipes and other pipes exposed to the weather or frost.

On cold water pipes for temperatures 15°-32° F. use 2 in. thickness; 0°-15° F. use 3 in. thickness; 32° below zero to zero use 4 in. thickness.

In Rolls 3 Feet Wide

Thickness, in.	½	¾	1
Wt. roll, lbs.	60	80	105
Per square foot	$0.12	.17	.20

In Rolls 6 Feet Wide

Thickness, in.	½	1
Wt. roll, lbs.	120	210
Per square foot	$0.12	.20

Fifty lineal feet in a roll.

INSULATING CEMENTS

J-M ASBESTOS

No. 500—For Temperatures to 1800° F.

An expanded vermiculite base insulating cement. Has exceptionally high covering capacity, combined with good working qualities and insulating value. Has good adhesion and can be applied in thick coats to irregular surfaces on which block and sheet insulation are not adaptable.

Covering capacity, 78 sq. ft., 1 in. thick, per 100 pounds.

Per bag
No. 500—50 lb. bags **$6.55**

No. 400—For Temperatures to 700° F.

A smooth finishing product of good insulating value.

Covering capacity, 25 sq. ft., 1 in. thick, per 100 pounds.

Per bag
No. 400—100 lb. bags **$10.10**

No. 352—For Temperature to 1000° F.

A general utility short fibre cement, used for many years where a cement with asbestos of minimum length is satisfactory.

Covering capacity, applied and dried, 19 sq. ft., 1 in. thick, per 100 pounds.

Per bag
No. 352—100 lb. bags **$9.10**

J-M 85% MAGNESIA

Composed of the same material as 85% Magnesia sectional and block insulation. It is essentially an insulating and not a finishing cement.

Used for pointing up and filling cracks in 85% magnesia molded insulation. Not recommended for insulating hard areas; see No. 400 for this application.

Covering capacity, applied and dried, 35 sq. ft., 1 in. thick, per 60 lb. bag.

Per bag
85% Magnesia Cement—60 lb. bags.**$10.25**

FURNACE CEMENT

FIREITE ASBESTOS

Johns-Manville
FIREITE
Asbestos Furnace Cement

Paste Form

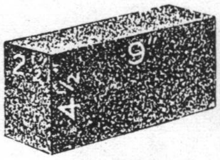
A ready-mixed asbestos paste for cementing joints in furnaces, ranges, stoves, flue pipes, etc. It effectively prevents escape of smoke, gases and dust.

Fireite is conveniently plastic, readily workable, odorless and adheres firmly to castings and sheet metal. When subjected to heat, it vitrifies without shrinkage and forms a permanent, air-tight joint.

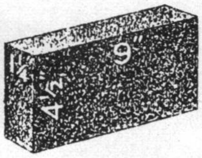
Size cans, lbs.	1	2	5	10
Per pound	$0.24	.18	.15	.14

FIRE BRICK

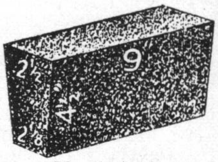
STANDARD



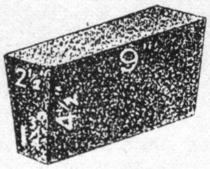
Straight



Split



No. 1 Arch



No. 2 Arch

9 in. Series

We can supply "Golden" Colorado Fire Brick in any of the Standard 9 in. series, and are also in a position to furnish other size series or special shapes.

When ordering give complete description and dimensions of the brick required.

General Information About Fire Brick

Finely ground fire clay should be used for laying fire clay brick. For high temperature service the fire clay should have a P.C.E. two to three cones lower than the P.C.E. of the brick, but no more.

Mix the fire clay with water to form a thin paste. Dip the brick and rub them in place to make brick to brick joints.

Warm the brickwork slowly to expel moisture.

From 300 to 450 pounds of fire clay is a sufficient quantity to lay 1000 standard 9-inch bricks (9x4½x2½ inches).

In vulnerable parts of furnaces the use of high temperature bonding mortar in place of fire clay is often advantageous.

For estimating brickwork constructed with standard 9-inch brick (9x4½x2½ inches), use the following figures, which are net amounts. Add a small percentage to take care of breakage and cutting.

1 square foot of wall, 4½ in. thick, requires 6.4 nine-inch straight brick.

1 square foot of wall, 9 in. thick, requires 12.8 nine-inch straight brick.

1 square foot of wall, 13½ in. thick, requires 19.2 nine-inch straight brick.

1 cubic foot of wall requires 17.1 brick.

1 cubic foot of fireclay brick weighs 120-140 pounds.

1000 standard 9-inch brick (9x4½x2½ in.), have a volume of 58.6 cubic feet.

HIGH TEMPERATURE
In Regular 9 in. Series

The severe wear and tear to boiler furnace linings in plants which are run to high capacity can be resisted effectively only by the highest type of refractory brick. Crystolon (silicon carbide) brick were developed especially to meet the requirements of this service.

Complete Information and Prices on Request

REFRACTORY MATERIALS

J-M

Johns-Manville
REFRACTORY
CEMENT
31
KEEP DRY
Johns-Manville

No. 31—Dry

A heat-setting cement for laying fire brick with a bond or cushion joint, ⅛ to $\frac{3}{16}$ in. thick. Recommended for temperatures up to 3100 deg. F.

Per 100 lbs.
No. 31—100 lb. bag **$10.95**

No. 32—Dry

A general purpose heat-setting cement. Supplied dry and finely-ground. When mixed with water, it develops excellent workability and will not settle in the mixing box. Used for setting brick with brick-to-brick joints and for wash-coating. Used for temperatures up to 3100 deg. F.

Per 100 lbs.
No. 32—100 lb. bags **$10.95**

No. 20—Ready Mixed

An air-setting cement, gray in color, for use where an extra hard air set is desired. Used up to 2700° F. for setting brick with a rubbed joint and for wash-coating. When desired to use old fire brick as a patching material or monolithic fill, No. 20 is thinned with water and the crushed fire brick added.

Size container, lbs.	5	10	25	50
Per pound	$0.16	.15	.14	.13
Size container, lbs.	100	220	500	850
Per pound	$0.12	.11	.10	.09

No. 26—Dry

A coarse cement which takes a medium air set. Used for setting fire brick with a medium bond joint. In special cases also recommended for hot or cold shallow patching, cement gun work and rammed linings. For temperatures up to 2900° F.

Per 100 lbs.
No. 26—100 lb. bags **$11.75**

J-M FIRECRETE
Dry, Castable

A hydraulic-setting, refractory cement which is mixed with water and used for pre-casting special refractory shapes, door linings, small monolithic linings and for making combustion chambers for domestic stokers.

Standard Firecrete

For temperatures up to 2400 deg. F. 110 lbs. required for each cubic foot of finished refractory material.

Per 100 lbs.
100 lb. bag **$10.20**

H. T. (High Temperature) Firecrete

For temperatures between 2400 and 2800 deg. F. 115 lbs. required for one cubic foot of finished refractory material.

Per 100 lbs.
100 lb. bag **$11.60**

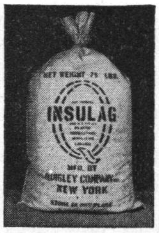
L. W. (Lightweight) Firecrete

Similar to Standard but much lighter in weight, with unusual low thermal conductivity and low heat storage capacity. For temperatures to 2400° F. 75 lbs. needed for one cubic foot of finished refractory.

Per 100 lbs.
100 lb. bag **$13.40**

REFRACTORY MATERIALS

INSULAG



Plastic Insulating Lagging

A superior product with unsurpassed insulating properties, for use on high or low temperature equipment. Has low heat storage and low thermo-conductivity. Expands and increases in thickness after application, retaining this increased volume.

Recommended for interface temperature up to 2200° F., or direct exposed to 2200° F. On the average 3 lbs. of Insulag covers 1 sq. ft. to a thickness of 1 in. Can be troweled to a smooth hard finish.

Per 100 lbs.
100 lb. bag **$9.50**

HEARTH-CRETE

Chrome Magnesite Castable

A special refractory for monolithic hearths in steel heating furnaces, for making burner blocks which are spall proof and resistant to erosion. A quick repair material for tap holes and side walls in open hearth furnaces. Other uses include patching, and also building monolithic side wall sections, in copper reverberatory furnaces; casting burner blocks and other special shapes, etc.

Comes in dry form and is mixed with water on the job, like concrete, to a stiff plastic consistency. It is then put into place in the hearth, or into suitable forms, leveled off, and troweled smooth. No ramming. Sets quickly at room temperatures with great structural strength, and can be put under heat in 24 hours.

Has unusual load bearing strength, resists abrasion and wear, and is resistant to slag penetration. For temperatures to 3000° F. 175 lbs. required for each cubic foot of refractory material.

Per 100 lbs.
100 lb. bag **$7.20**

Q CHROME

CHROME
NEUTRAL-BASE REFRACTORY CEMENT
MFD. BY
QUIGLEY COMPANY
NEW YORK
STORE IN DRY PLACE

Neutral Base Cement

For severe service duty where extreme temperatures and destructive slagging, chemical or abrasive conditions are encountered.

For bonding brick in boiler furnaces burning hog fuel, high sulphur coal or oil, refinery acid sludge, etc.; also used in all types of oil, stoker and powdered coal fired furnaces operated at high ratings. Used successfully in various steel and non-ferrous metallurgical furnaces because of its resistance to high temperatures, slagging and abrasive conditions.

Will not soften or crumble at the highest temperatures encountered in any fuel-fired furnace.

Coverage, 450 to 600 lbs. per 1000 brick; surfacing, 2 lbs. per sq. ft., 1 in. thick.

Per 100 lbs.
100 lb. bag **$7.20**

REFRACTORY MATERIALS

HYTEMPITE

HYTEMPITE
QUIGLEY COMPANY INC
NEW YORK U.S.A.

Plastic Air-Setting High Temperature Cement

For bonding, surfacing, laying refractory brick and shapes. Also for quick hot or cold furnace repairs, building monolithic gas-tight baffles, lining ladles, repairing coke ovens.

It forms a lasting union between the materials to be joined, air sets at normal room temperature and retains its strength up to temperatures at which the best quality fire brick loses strength and becomes soft.

Hytempite trowels easily, and insures a tight wall or structure which will not admit the passage of gases or any foreign substance such as dust, ashes, etc. It strengthens the wall, will withstand the action of expansion and contraction and can be put under heat while wet without injury. It withstands the cutting action of flames, and is recommended for oil furnaces where the gases are generally of high velocity.

Coverage, 225 to 350 lbs. per 100 bricks, 20 lbs. for surfacing 100 sq. ft.

Prices on Request

Q-CHROMASTIC

Plastic Super-Refractory Surfacing Mortar

Q-Chromastic is used in the construction and maintenance of refractory structures. Through its use, as a wash or veneer coating over new or old furnace walls and arches, the life of brickwork is increased, repairs are reduced, and operating results bettered.

Produces a strongly bonded, tough, dense and highly refractory veneer or facing, which acts as a rugged barrier between the brickwork and the flame, slags, gases, etc. Because of its neutral base, it prevents the destructive action of slag on the brickwork. The application of a coat on brickwork of oilfield furnaces gives what is known as a dry wall and the adhesion of fly ash caused by sticky walls is eliminated.

It adheres tenaciously to wall surfaces through the range of furnace temperatures. Resists slagging action, abrasion and flame erosion. Materially reduces spalling troubles. Fills and seals the pores and voids in the brickwork, makes linings air and gas tight. Prevents fluxing.

Coverage 2 lbs. per sq. ft., ⅛ in. thick.

Per 100 lbs.
100 lb. bag **$7.20**

FIRE CLAY

Can be furnished in any quantity for use in metallurgical work or for any purpose for which fire clay is needed.

Prices on Request

INDUSTRIAL PAINTS

QUIGLEY TRIPLE-A

A complete line of high quality heavy duty paints, each specifically formulated to give maximum corrosion prevention under conditions which quickly destroy ordinary paints.

TRIPLE-A INDUSTRIAL ENAMELS

For Protection and Decoration of all Surfaces

QUIGLEY TRIPLE-A PAINTS FOR ALL SURFACES

These top quality color enamels are resistant to acid and alkaline fumes, moisture, turpentine, gasoline, benzine, animal fats, lubricating oils, and other agents that quickly destroy ordinary paints.

Use Triple-A industrial enamels for coating engines, machinery, hydrants, pumps, motors, and all surfaces where protection in addition to color decoration is desired.

They are non-contaminating and can be used therefore with safety and outstanding results in breweries, flour mills, bakeries, dairies and other food product industries.

Colors

No. 115—Maroon
No. 120—Green
No. 125—Red
No. 128—Orange
No. 130—Gray
No. 132—Blue
No. 140—Yellow
No. 145—White

Colors for Pipe Lines

Triple-A industrial enamels are excellent for identification of pipe lines—according to the suggested color scheme approved by National Safety Council and American Society of Mechanical Engineers.

F—Fire Protection Equipment—Red.
D—Dangerous Materials—Yellow or Orange.
S—Safe Materials—Gray.
P—Protective Materials—Bright Blue.
V—Extra Valuable Materials—Maroon.

Size cans, gals.	1	5
Wt. can, lbs.	11	57
Per gallon	$6.45	6.20

TRIPLE-A ENAMEL THINNER

No. 100

To be used exclusively in thinning above enamels.

Size, cans	1 qt.	1 gal.
Wt. can, lbs.	2½	10
Per can	$0.50	1.60

TRIPLE-A No. 10 BLACK

QUIGLEY
AAA
TRIPLE A

Waterproofs and Prevents Corrosion of Industrial Structures and Equipment

Waterproof and highly resistant to the action of acids and alkalies, it stops and prevents rusting of iron and steel, disintegration of concrete structures and is an effective preserver of wood.

Has excellent heat resisting properties. It adheres firmly, withstands severe atmospheric temperature changes, and properly applied, will neither chip nor peel. No priming coat is necessary. An important advantage is that it may be applied on damp surfaces.

Use No. 10 to waterproof and protect industrial equipment and structures—steelwork, bridges, towers, cranes, hoists, booms, tank exteriors, machinery, steel window sash, fences, pipe lines, condenser coils, stacks, boiler fronts, breechings, buckstays, tie rods, etc.

Size	**1 gal. can**	**5 gal. can**	**30 gal. drum**	**55 gal. drum**
Wt. each, lbs.	11	53	321	575
Per gallon	$2.75	2.55	2.30	2.15

TRIPLE-A No. 20 HEAVY-DUTY BLACK

Resists Abrasion, Sulphurous Acid Fumes, Brine, Moisture, etc.

A special tough, abrasion-resisting anticorrosive coating for protecting steel structures and equipment under the most severe conditions encountered in industrial, railroad and mine service.

Virtually inert to the action of corrosive fumes, including sulphur dioxide, chlorine and ammonia. Provides unusual protection and long service and is specified by leading industrial, public utility and railroad companies to protect plant and equipment.

Should be used on the inside of steel coal bunkers, ash hoppers, and on conveyor systems handling gritty materials.

Size cans, gals.	1	5
Wt. can, lbs.	14	71
Per gallon	$2.85	2.65

TRIPLE-A No. 111 HYDRAULIC BLACK

AAA
PREVENTS CORROSION

For Coating Inside of Water Tanks

Also used where foodstuffs and beverages are handled.

Combines excellent waterproofing and rust-resisting qualities. It is extensively used for protecting the inside of steel, concrete or wood storage tanks, standpipes, cold storage vaults and general equipment.

Warranted not to impart taste, odor or color to drinking water, and recommended wherever strong paint odors are objectionable or would contaminate foodstuffs and beverages.

May be applied by brushing, spraying or dipping. Does not require heating before application.

Size	**1 gal. can**	**5 gal. can**	**30 gal. drum**	**55 gal. drum**
Wt. each, lbs.	10	44	259	470
Per gallon	$2.75	2.55	2.30	2.15

TRIPLE-A No. 400 DAIRY WHITE

The new and improved longlife, white coating for food processing plants, bottlers, creameries and dairies.

Specifically manufactured to withstand the severe conditions of dampness and moisture encountered in dairies, creameries, bakeries, bottling and cold storage plants, and packing houses.

Triple A Dairy White is not affected by repeated washings, or by the reaction of cleaners, and is highly resistant to alkalies, fats, and other destructive agents. Does not rub off; dries to a hard, smooth high-gloss finish.

Size cans, gals.	1	5
Wt. can, lbs.	13	64
Per gallon	$4.90	4.80

TRIPLE-A No. 800 CHROMATE PRIMER

For Metal

The unexcelled rust-inhibitive zinc chromate primer that assures full rust protection to structural and all metal surfaces.

Should be used on any steel surface where a priming coat is required and especially on new work.

Size cans, gals.	1	5
Wt. can, lbs.	16	79
Per gallon	$4.75	4.65

TRIPLE-A No. 316 ALUMINUM

High Heat

When mixed with 1 lb. of aluminum powder per gallon, it affords maximum heat resistance and a brilliant aluminum finish for all equipment operating at high temperatures. Ideal for steam, Diesel, gas and gasoline engines, steam pumps, super-heated steam piping, hot exhaust pipes and other services where temperature does not exceed 800° F.

Complete With 1 Pound Aluminum Powder Per Gallon

Size	**1 gal. can**	**5 gal. can**	**30 gal. drum**	**55 gal. drum**
Wt. each, lbs.	9	42	245	471
Per gallon	$5.55	5.35	5.10	4.95

All above, open stock.

INDUSTRIAL PAINTS

QUIGLEY TRIPLE-A READY MIXED ALUMINUM PAINT

Will far outlast the various aluminum paints available in the past and give superior protection and decoration to the many surfaces for which aluminum coatings are desired.

The proper amount of aluminum powder is incorporated so as to produce maximum leafing, high hiding power, great brilliance and long life.

No. 700—Interior Coating

Formulated from vehicles that are free from objectionable odors. Quick-drying, waterproof, and highly resistant to the destructive influences that destroy ordinary types of aluminum coatings. A bright, tough, smooth metallic surface is obtained, with a minimum of brushing or spraying.

A few of its many uses are: metal exhaust ducts, stair railings, stair wells, plant equipment, interior walls, overhead structural steel and similar types of surfaces.

Size cans, gals.	1	5
Wt. per can, lbs.	10	49
Per gallon	$5.05	4.80

No. 705—Exterior Coating

Offered for use wherever the finest, most durable aluminum coating is desired.

A few of its many uses are: bridges, viaducts, lamp posts, water tanks, electrical transmission towers and equipment, fences, railroad cars, steel stacks and other wood, concrete and masonry structures too numerous to mention.

To obtain long life and maximum service from No. 705 exterior coating we recommend a primer coat of Triple-A No. 800 chromatic Primer applied to clean, bare metal. (See preceding page).

Size cans, gals.	1	5
Wt. per can, lbs.	10	47
Per gallon	$4.23	3.98

Open stock.

WOOD AND TEXTILE PRESERVATIVE

COPPER NAPHTHENATE

For Protecting Wood and Textiles Against Rot, Decay, Mildew and Insects

Practically all wood, especially timber in contact with moist ground or in areas subjected to dampness is attacked by wood destroying molds or fungi, causing failure under loads, or made use by rotting.

The application of Copper Naphthenate seals the wood against attack of these wood destroying organisms.

Comes ready for use and requires no heating. Can be applied by brush, spray, dipping or pressure impregnation. It is non-poisonous to humans; does not irritate the eyes or induce dermatitis. Does not increase fire risk.

No. 1005

For use on heavy timber construction, such as mine timbers, pilings, trestles, poles, fence posts or on areas which do not require finish coats of paint.

Size cans, gals.	1	5
Wt. per can, lbs.	9	44
Per gallon	$2.15	1.90

No. 1010

For use on rope, tarpaulins, burlap and other heavy fabrics.

Size cans, gals.	1	5
Wt. per can, lbs.	9	44
Per gallon	$2.75	2.50

No. 1015

A neutral color preservative for use on canvas, awnings, or on areas where the characteristic green color of copper is undesirable.

Size cans, gals.	1	5
Wt. per can, lbs.	9	44
Per gallon	$2.75	2.50

Open stock.

PIPE JOINT COMPOUND

KEYTITE WATERPROOF

Seals Obstinate Joints With Ease

KEY-TITE
WATER PROOF
PIPE JOINT
COMPOUND

For effectively sealing screw thread and gasket joints on gas, water, steam, compressed air lines, etc. It has many advantages over other compounds commonly used since the pigment will not settle to the bottom of the container.

Keytite is held in equal suspension at all times and is always ready for service. It is a plastic lubricant which will seal the most obstinate joint yet never "freezing" it.

Size, cans	Per can	Cans in case	Wt. case, lbs.
½ pt.	$0.35	48	36
½ pt. Handy Dope Kit	.45	48	36
1 pt.	.55	24	36
1 qt.	1.00	12	36
½ gal.	1.65	12	72
1 gal.	3.00	6	72
5 gal.	12.50	..	60

Note—Available in 100 to 400 lb. drums

Prices on Request

PIPE JOINT COMPOUND

DIXON'S GRAPHITE

DIXON'S
PIPE JOINT GRAPHITE
COMPOUND
JOSEPH DIXON CRUCIBLE COMPANY

A superlative lubricant and permanent seal for all threaded, gasketed or flanged joints on pipe lines conveying aqueous fluids, vapors and gases.

Leakproofs all joints against hot or cold water, steam, air, gas and all aqueous solvents, acids, alkalies and brines, assuring quick, effortless assembling and easy dismantling even years later, without damage to gaskets, threads or fittings.

	Per tube
4 oz. tube—36 tubes in a carton; wt. per carton 10 lbs.	$0.35

Size	**1 lb. can**	**10 lb. can**	**25 lb. drum**	**60 lb. drum**
Cans in case	36	6	..	..
Wt. case, lbs.	48	65	30	68
Per pound	$0.50	.40	.35	.33

DIXON'S GRAPHITE SEAL

Oil Insoluble, Gasoline Insoluble, Heat-Proof, Corrosion-Proof

Makes permanent leak-proof connections quickly and serves as a seal on gasketed, threaded or flanged joints on all varieties of pipe lines conveying hot or cold oil, gasoline and petroleum gases.

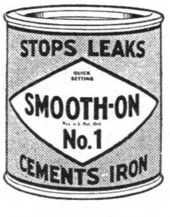
The graphite content not only eases the operation of setting up fittings tightly, but permits a fitting or gasket to be loosened and removed, even years later, without fracture or damage.

Applied with brush. Thinned with water.

Size	**1 lb. can**	**10 lb. can**	**25 lb. drum**	**50 lb. drum**
Cans in case	36	6	..	..
Wt. case, lbs.	48	65	30	68
Per pound	$0.85	.50	.41	.37

IRON CEMENT

SMOOTH-ON



No. 1—Powder Form

A quick-hardening iron cement sold in powdered form. Used by mixing with water.

For repairing breaks in castings, making tight joints and seams and stopping leaks in boilers, pipe lines, pressure containers, etc. Becomes hard as iron when metallized and expands at the same rate. May be used on iron, brass, steel, copper, lead, aluminum, etc. Will withstand fire, water, steam and oil.

Size cans	**7 oz.**	**1 lb.**	**5 lb.**	**20 lb.**
No. in carton	12	6	..	..
No. in case	72	36	6	..
Wt. per case, lbs.	46	46	35	21
Per can	$0.30	.50	2.50	10.00

No. 2—Powder Form

A slow-hardening hydraulic iron cement, used for same purposes as No. 1 but permitting more time for making the application. Hardens under water.

Size cans, lbs.	1	5	20
No. in case	36	6	..
Wt. per case, lbs.	46	35	21
Per can	$0.50	2.50	10.00

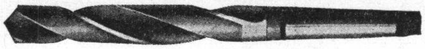
No. 4—Powder Form

For foundry trade for filling surface defects in castings. Used by mixing with water. When hardened, has the color and appearance of cast iron and can be filed like iron. Two grades: No. 4A for fine-grained and No. 4B for coarse-grained casting.

Size cans, lbs.		1	5	20
No. in case		36	6	..
Wt. per case		46	35	21
No. 4A	Per can	$0.40	2.00	8.00
No. 4B	Per can	.30	1.50	6.00

TWIST DRILLS

CLEVELAND TAPER SHANK CLE-FORGE HIGH SPEED STEEL



No. 940—Shanks Regular

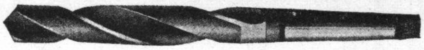
Diam., in.	Each	Lgth. over all, in.	Taper shank, Nos.	Diam., in.	Each	Lgth. over all, in.	Taper shank, Nos.
⅛	$ 1.00	5⅛	1	1 7/32	$ 16.50	13⅛	4
9/64	1.10	5⅜	1	1 15/64	18.00	13½	4
5/32	1.10	5⅜	1	1¼	18.00	13½	4
11/64	1.25	5¾	1	1 17/64	20.00	14⅛	4
3/16	1.25	5¾	1	1 9/32	20.00	14⅛	4
13/64	1.35	6	1	1 19/64	20.75	14¼	4
7/32	1.35	6	1	1 5/16	20.75	14¼	4
15/64	1.40	6⅛	1	1 21/64	21.50	14⅜	4
¼	1.40	6⅛	1	1 11/32	21.50	14⅜	4
17/64	1.50	6¼	1	1 23/64	22.25	14½	4
9/32	1.50	6¼	1	1⅜	22.25	14½	4
19/64	1.60	6⅜	1	1 25/64	23.00	14⅝	4
5/16	1.60	6⅜	1	1 13/32	23.00	14⅝	4
21/64	1.70	6½	1	1 27/64	23.75	14¾	4
11/32	1.70	6½	1	1 7/16	23.75	14¾	4
23/64	1.90	6¾	1	1 29/64	24.50	14⅞	4
⅜	1.90	6¾	1	1 15/32	24.50	14⅞	4
25/64	2.10	7	1	1 31/64	25.25	15	4
13/32	2.10	7	1	1½	25.25	15	4
27/64	2.30	7¼	1	1 33/64	28.75	16⅜	5
7/16	2.30	7¼	1	1 17/32	28.75	16⅜	5
29/64	2.50	7½	1	1 35/64	30.75	16⅝	5
15/32	2.50	7½	1	1 9/16	30.75	16⅝	5
31/64	2.95	8¼	2	1 37/64	32.75	16⅞	5
½	2.95	8¼	2	1 19/32	32.75	16⅞	5
33/64	3.25	8½	2	1 39/64	34.00	17	5
17/32	3.25	8½	2	1⅝	34.00	17	5
35/64	3.75	8¾	2	1 41/64	35.25	17⅛	5
9/16	3.75	8¾	2	1 21/32	35.25	17⅛	5
37/64	4.00	8¾	2	1 43/64	36.50	17⅛	5
19/32	4.00	8¾	2	1 11/16	36.50	17⅛	5
39/64	4.25	8¾	2	1 45/64	37.75	17⅛	5
⅝	4.25	8¾	2	1 23/32	37.75	17⅛	5
41/64	4.75	9	2	1 47/64	39.00	17⅛	5
21/32	4.75	9	2	1¾	39.00	17⅛	5
43/64	5.25	9¼	2	1 25/32	40.25	17⅛	5
11/16	5.25	9¼	2	1 13/16	41.50	17⅛	5
45/64	5.75	9½	2	1 27/32	42.75	17⅛	5
23/32	5.75	9½	2	1⅞	45.00	17⅜	5
47/64	6.25	9¾	2	1 29/32	46.25	17⅜	5
¾	6.25	9¾	2	1 15/16	47.50	17⅜	5
49/64	6.50	9⅞	2	1 31/32	48.75	17⅜	5
25/32	6.50	9⅞	2	2	50.00	17⅜	5
51/64	7.25	10¾	3	2 1/32	51.75	17⅜	5
13/16	7.25	10¾	3	2 1/16	53.50	17⅜	5
53/64	7.65	10¾	3	2 3/32	55.25	17⅜	5
27/32	7.65	10¾	3	2⅛	57.00	17⅜	5
55/64	8.05	10¾	3	2 5/32	58.75	17⅜	5
⅞	8.05	10¾	3	2 3/16	60.50	17⅜	5
57/64	8.45	10¾	3	2 7/32	62.25	17⅜	5
29/32	8.45	10¾	3	2¼	64.00	17⅜	5
59/64	8.85	10¾	3	2 5/16	67.50	17⅜	5
15/16	8.85	10¾	3	2⅜	71.00	17⅜	5
61/64	9.65	11	3	2 7/16	87.50	18¾	5
31/32	9.65	11	3	2½	91.00	18¾	5
63/64	10.25	11	3	2 9/16	100.00	19½	5
1	10.25	11	3	2⅝	105.00	19½	5
1 1/64	11.00	11⅛	3	2 11/16	115.50	20⅜	5
1 1/32	11.00	11⅛	3	2¾	120.50	20⅜	5
1 3/64	11.75	11¼	3	2 13/16	129.50	21⅛	5
1 1/16	11.75	11¼	3	2⅞	135.00	21⅛	5
1 5/64	13.25	12½	4	2 15/16	142.50	21¾	5
1 3/32	13.25	12½	4	3	150.00	21¾	5
1 7/64	14.25	12¾	4	3 1/16	178.00	24 7/16	6
1⅛	14.25	12¾	4	3⅛	189.00	24 7/16	6
1 9/64	15.00	12⅞	4	3 3/16	200.00	24 7/16	6
1 5/32	15.00	12⅞	4	3¼	216.00	25 7/16	6
1 11/64	15.75	13	4	3 5/16	232.00	25 7/16	6
1 3/16	15.75	13	4	3⅜	249.00	25 7/16	6
1 13/64	16.50	13⅛	4	3 7/16	266.00	25 7/16	6
				3½	287.00	26 7/16	6

One in a package; sizes ⅛ to 15/16 in. incl., six in a paper band.

No. 940K—Same dimensions as No. 940 but of more rugged construction for heavy duty uses. Prices slightly higher. Available in sizes ¼ to 1½ in.

TWIST DRILLS

CLEVELAND TAPER SHANK CLE-FORGE HIGH SPEED STEEL



No. 941—Shanks Smaller

Diam., in.	Each	Lgth. over all, in.	Taper shank, Nos.	Diam., in.	Each	Lgth. over all, in.	Taper shank, Nos.
31/64	$ 2.75	7¾	1	1 9/16	$ 28.20	15¼	4
½	2.75	7¾	1	1 37/64	30.10	15½	4
33/64	3.05	8	1	1 19/32	30.10	15½	4
17/32	3.05	8	1	1 39/64	31.25	15⅝	4
35/64	3.50	8¼	1	1⅝	31.25	15⅝	4
9/16	3.50	8¼	1	1 41/64	32.40	15¾	4
51/64	6.75	10	2	1 21/32	32.40	15¾	4
13/16	6.75	10	2	1 43/64	33.55	15¾	4
53/64	7.15	10	2	1 11/16	33.55	15¾	4
27/32	7.15	10	2	1 45/64	34.70	15¾	4
55/64	7.50	10	2	1 23/32	34.70	15¾	4
⅞	7.50	10	2	1 47/64	37.00	16¼	4
57/64	7.85	10	2	1¾	37.00	16¼	4
29/32	7.85	10	2	1 25/32	38.20	16¼	4
1 5/64	12.20	11½	3	1 13/16	39.40	16¼	4
1 3/32	12.20	11½	3	1 27/32	40.55	16¼	4
1 7/64	13.15	11¾	3	1⅞	42.75	16½	4
1⅛	13.15	11¾	3	1 29/32	43.95	16½	4
1 9/64	13.85	11⅞	3	1 15/16	45.45	16⅝	4
1 5/32	13.85	11⅞	3	1 31/32	46.65	16⅝	4
1 11/64	14.55	12	3	2	47.85	16⅝	4
1 3/16	14.55	12	3	3 1/16	160.00	22	5
1 13/64	15.25	12⅛	3	3⅛	170.00	22	5
1 7/32	15.25	12⅛	3	3 3/16	180.00	22	5
1 15/64	16.65	12½	3	3¼	195.00	23	5
1¼	16.65	12½	3	3 5/16	210.00	23	5
1 33/64	26.35	15	4	3⅜	225.00	23	5
1 17/32	26.35	15	4	3 7/16	240.00	23	5
1 35/64	28.20	15¼	4	3½	260.00	24	5

No. 942—Shanks Larger

⅜	$2.10	7⅜	2	45/64	$ 6.20	10¼	3
25/64	2.25	7½	2	23/32	6.20	10¼	3
13/32	2.25	7½	2	47/64	6.75	10½	3
27/64	2.45	7¾	2	¾	6.75	10½	3
7/16	2.45	7¾	2	49/64	7.00	10⅝	3
29/64	2.65	8	2	25/32	7.00	10⅝	3
15/32	2.65	8	2	1	11.20	12	4
41/64	5.15	9¾	3	1 1/64	12.00	12⅛	4
21/32	5.15	9¾	3	1 1/32	12.00	12⅛	4
43/64	5.70	10	3	1 3/64	12.80	12¼	4
11/16	5.70	10	3	1 1/16	12.80	12¼	4

One in a package.

READY REFERENCE CHARTS

Ready Reference
C
HANG ME UP IN THE SHOP
I WILL SAVE YOU TIME AND MISTAKES
Compliments of The CLEVELAND TWIST DRILL COMPANY

Compliments of Cleveland

These cardboard charts—14 pages on 7 cards—contain a wealth of data for the practical shopman. Ready Reference contains Decimal Equivalents, Tables of Cutting Speeds, Information on Cutting Speeds, Feeds and Cutting Lubricants, Tap Drill Sizes—and a host of other data.

Ready Reference is intended only for shops and requests should be made only on business letterheads.

TWIST DRILLS

CLEVELAND STRAIGHT SHANK, LONG SET

No. 950—Cle-Forge High Speed

Diam., in.	Each	Lgth. over all, in.	Diam., in.	Each	Lgth. over all, in.	Diam., in.	Each	Lgth. over all, in.
⅛	$1.00	5⅛	19/32	$ 4.00	8¾	1 1/16	$11.75	11¼
9/64	1.10	5⅜	39/64	4.25	8¾	1 5/64	12.20	11½
5/32	1.10	5⅜	⅝	4.25	8¾	1 3/32	12.20	11½
11/64	1.25	5¾	41/64	4.75	9	1 7/64	13.15	11¾
3/16	1.25	5¾	21/32	4.75	9	1⅛	13.15	11¾
13/64	1.35	6	43/64	5.25	9¼	1 9/64	13.85	11⅞
7/32	1.35	6	11/16	5.25	9¼	1 5/32	13.85	11⅞
15/64	1.40	6⅛	45/64	5.75	9½	1 11/64	14.55	12
¼	1.40	6⅛	23/32	5.75	9½	1 3/16	14.55	12
17/64	1.50	6¼	47/64	6.25	9¾	1 13/64	15.25	12⅛
9/32	1.50	6¼	¾	6.25	9¾	1 7/32	15.25	12⅛
19/64	1.60	6⅜	49/64	6.50	9⅞	1 15/64	16.65	12½
5/16	1.60	6⅜	25/32	6.50	9⅞	1¼	16.65	12½
21/64	1.70	6½	51/64	6.75	10	1 9/32	20.00	14⅛
11/32	1.70	6½	13/16	6.75	10	1 5/16	20.75	14¼
23/64	1.90	6¾	53/64	7.15	10	1 11/32	21.50	14⅜
⅜	1.90	6¾	27/32	7.15	10	1⅜	22.25	14½
25/64	2.10	7	55/64	7.50	10	1 13/32	23.00	14⅝
13/32	2.10	7	⅞	7.50	10	1 7/16	23.75	14¾
27/64	2.30	7¼	57/64	7.85	10	1 15/32	24.50	14⅞
7/16	2.30	7¼	29/32	7.85	10	1½	25.25	15
29/64	2.50	7½	59/64	8.85	10¾	1 9/16	28.20	15¼
15/32	2.50	7½	15/16	8.85	10¾	1⅝	31.25	15⅝
31/64	2.75	7¾	61/64	9.65	11	1 11/16	33.55	15¾
½	2.75	7¾	31/32	9.65	11	1¾	37.00	16¼
33/64	3.05	8	63/64	10.25	11	1 13/16	39.40	16¼
17/32	3.05	8	1	10.25	11	1⅞	42.75	16½
35/64	3.50	8¼	1 1/64	11.00	11⅛	1 15/16	45.45	16⅝
9/16	3.50	8¼	1 1/32	11.00	11⅛	2	47.85	16⅝
37/64	4.00	8¾	1 3/64	11.75	11¼			

No. 950K—Same dimensions as No. 950 but of more rugged construction for heavy duty uses. Prices slightly higher. Available in sizes ⅛ to 1¼ in.

⅛ to 23/64 in. incl., twelve in a package; larger sizes, one in a package, six in a paper band.

CLEVELAND STRAIGHT SHANK, SHORT SET

No. 108—Carbon Steel **No. 917—High Speed Steel**

Diam., in.	No. 108 Carbon Steel, doz.	No. 917 High Speed, doz.	Lgth. over all, in.	Diam., in.	No. 108 Carbon Steel, doz.	No. 917 High Speed, doz.	Lgth. over all, in.
1/64	$1.50	$4.25	¾	17/64	$ 3.50	$ 7.50	4⅛
1/32	1.50	3.50	1⅜	9/32	3.80	8.25	4¼
3/64	1.55	2.40	1¾	19/64	4.00	9.00	4⅜
1/16	1.60	2.40	1⅞	5/16	4.35	9.75	4½
5/64	1.65	2.50	2	21/64	4.70	10.75	4⅝
3/32	1.70	2.75	2¼	11/32	5.05	11.75	4¾
7/64	1.75	3.15	2⅝	23/64	5.50	12.75	4⅞
⅛	1.80	3.60	2¾	⅜	6.00	13.75	5
9/64	1.85	3.90	2⅞	25/64	6.50	15.00	5⅛
5/32	1.90	4.15	3⅛	13/32	7.00	16.25	5¼
11/64	2.00	4.50	3¼	27/64	7.75	17.50	5⅜
3/16	2.25	4.85	3½	7/16	8.50	18.75	5½
13/64	2.50	5.45	3⅝	29/64	9.25	20.00	5⅝
7/32	2.75	5.95	3¾	15/32	10.00	21.25	5¾
15/64	3.00	6.25	3⅞	31/64	11.00	22.75	5⅞
¼	3.25	6.75	4	½	12.00	24.25	6

Note—For Special Purpose Drills see page 197 for Nos. 924, 957, 960, 967, 3917 and 4917.

1/64 and 1/32 in., one dozen in a wooden tube; 3/64 to 9/32 in., one dozen in an envelope; larger sizes, one-half dozen in an envelope.

TWIST DRILLS

CLEVELAND STRAIGHT SHANK, WIRE GAUGE

No. 918—High Speed Steel

Wire ga., Nos.	Per dozen	Decimal dia., in.	Lgth. over all, in.	Wire ga., Nos.	Per dozen	Decimal dia., in.	Lgth. over all, in.
1	$6.25	.2280	3⅞	**41**	$2.80	.0960	2⅜
2	6.25	.2210	3⅞	**42**	2.75	.0935	2¼
3	5.95	.2130	3¾	**43**	2.60	.0890	2¼
4	5.95	.2090	3¾	**44**	2.60	.0860	2⅛
5	5.95	.2055	3¾	**45**	2.60	.0820	2⅛
6	5.95	.2040	3¾	**46**	2.50	.0810	2⅛
7	5.45	.2010	3⅝	**47**	2.50	.0785	2
8	5.45	.1990	3⅝	**48**	2.50	.0760	2
9	5.45	.1960	3⅝	**49**	2.50	.0730	2
10	5.25	.1935	3⅝	**50**	2.40	.0700	2
11	5.25	.1910	3½	**51**	2.40	.0670	2
12	5.25	.1890	3½	**52**	2.40	.0635	1⅞
13	4.85	.1850	3½	**53**	2.40	.0595	1⅞
14	4.85	.1820	3⅜	**54**	2.40	.0550	1⅞
15	4.85	.1800	3⅜	**55**	2.40	.0520	1⅞
16	4.65	.1770	3⅜	**56**	2.40	.0465	1¾
17	4.65	.1730	3⅜	**57**	2.40	.0430	1¾
18	4.50	.1695	3¼	**58**	2.40	.0420	1⅝
19	4.35	.1660	3¼	**59**	2.40	.0410	1⅝
20	4.35	.1610	3¼	**60**	2.40	.0400	1⅝
21	4.35	.1590	3¼	**61**	3.50	.0390	1⅝
22	4.15	.1570	3⅛	**62**	3.50	.0380	1½
23	4.15	.1540	3⅛	**63**	3.50	.0370	1½
24	4.05	.1520	3⅛	**64**	3.50	.0360	1½
25	3.90	.1495	3	**65**	3.50	.0350	1½
26	3.90	.1470	3	**66**	3.50	.0330	1⅜
27	3.90	.1440	3	**67**	3.50	.0320	1⅜
28	3.90	.1405	2⅞	**68**	3.50	.0310	1⅜
29	3.60	.1360	2⅞	**69**	3.50	.02925	1⅜
30	3.60	.1285	2¾	**70**	3.50	.0280	1¼
31	3.30	.1200	2¾	**71**	4.25	.0260	1¼
32	3.30	.1160	2¾	**72**	4.25	.0250	1⅛
33	3.30	.1130	2⅝	**73**	4.25	.0240	1⅛
34	3.15	.1110	2⅝	**74**	4.25	.0225	1
35	3.15	.1100	2⅝	**75**	4.25	.0210	1
36	3.10	.1065	2½	**76**	4.25	.0200	⅞
37	2.95	.1040	2½	**77**	4.25	.0180	⅞
38	2.95	.1015	2½	**78**	4.25	.0160	⅞
39	2.95	.0995	2⅜	**79**	4.25	.0145	¾
40	2.80	.0980	2⅜	**80**	4.25	.0135	¾

Note—For Special Purpose Drills see page 197 for Nos. 925, 956, 961, 965, 3918 and 4918.

Nos. 1 to 60, one dozen in an envelope; Nos. 61 to 80, one dozen in a wooden tube.

CLEVELAND STRAIGHT SHANK, LETTER SIZE

No. 919—High Speed Steel

Size	Per dozen	Decimal diam., in.	Length, in.	Size	Per dozen	Decimal diam., in.	Length, in.
A	$6.25	.234	3⅞	**N**	$ 9.50	.302	4⅜
B	6.55	.238	4	**O**	10.45	.316	4½
C	6.55	.242	4	**P**	10.75	.323	4⅝
D	6.75	.246	4	**Q**	11.75	.332	4¾
E	6.75	.250	4	**R**	11.75	.339	4¾
F	7.50	.257	4⅛	**S**	12.75	.348	4⅞
G	7.50	.261	4⅛	**T**	12.75	.358	4⅞
H	8.00	.266	4⅛	**U**	13.75	.368	5
I	8.00	.272	4⅛	**V**	14.65	.377	5
J	8.00	.277	4⅛	**W**	15.00	.386	5⅛
K	8.25	.281	4¼	**X**	15.85	.397	5⅛
L	8.75	.290	4¼	**Y**	15.85	.404	5¼
M	9.00	.295	4⅜	**Z**	17.10	.413	5¼

Note—For Special Purpose Drills see page 197 for Nos. 923, 955, 3919 and 4919.

Sizes A to M, one dozen; sizes N to Z, one-half dozen in an envelope.

TWIST DRILLS

CLEVELAND BIT STOCK FOR METAL OR WOOD

No. 114—Carbon Steel

Dimensions of shank 3/16x⅜x1¼ in. long.

Diam., in.	Per dozen	Lgth. over all, in.	Diam., in.	Per dozen	Lgth. over all, in.
1/16	$ 2.50	3⅜	½	$13.00	6¾
3/32	2.70	3⅝	17/32	14.25	7½
⅛	3.00	3⅞	9/16	15.50	7½
5/32	3.50	4⅛	19/32	16.75	7½
3/16	4.00	4⅜	⅝	18.00	7½
7/32	4.50	4⅝	21/32	19.50	7½
¼	5.00	5⅛	11/16	21.00	7½
9/32	6.00	5¼	23/32	22.50	7½
5/16	7.00	5½	¾	24.00	7½
11/32	8.00	5¾	13/16	27.00	7½
⅜	8.50	5⅞	⅞	30.00	7½
13/32	9.25	6	15/16	33.00	7½
7/16	10.50	6¼	1	36.00	7½
15/32	11.75	6⅝			

1/16 to ½ in., one dozen; larger sizes, one-half dozen in a box.

CLEVELAND WOOD BITS, FOR BRACE

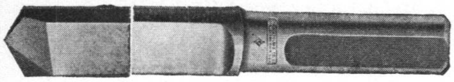
No. 114A—Carbon Steel

Dimensions of shank 3/16x⅜x1¼ in. long.

Diam., in.	Per dozen	Length over all, in.	Diam., in.	Per dozen	Length over all, in.
1/16	$3.25	3½	13/32	$ 7.50	8¼
3/32	3.25	4	7/16	8.00	8½
⅛	3.25	4½	15/32	8.75	8¾
5/32	3.50	5	½	9.50	9
3/16	4.00	5½	9/16	11.00	9½
7/32	4.50	6	⅝	12.50	9½
¼	5.00	6½	11/16	14.50	10
9/32	5.50	7	¾	16.50	10
5/16	6.00	7½	⅞	21.00	10
11/32	6.50	7¾	1	27.00	10
⅜	7.00	8			

1/16 to ½ in., one dozen, 9/16 and ⅝ in. one-half dozen in a box; larger sizes, one in a package.

CLEVELAND FLAT TRACK DRILLS



No. 948—High Speed Steel

Shanks are 2¼ in. long and .648 in. diameter (commonly called ⅝ in.).

6¼ in. long.

Diam., in.	Each	Diam., in.	Each	Diam., in.	Each
½	$2.00	⅞	$2.80	1¼	$3.90
9/16	2.10	15/16	3.00	1 5/16	4.40
⅝	2.20	1	3.10	1⅜	4.80
11/16	2.30	1 1/16	3.30	1 7/16	5.60
¾	2.40	1⅛	3.50	1½	6.20
13/16	2.60	1 3/16	3.70		

One in a package.

CLEVELAND BONDING DRILLS

No. 944—High Speed Steel

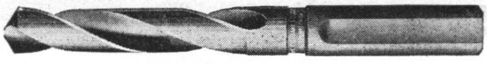
For drilling holes for bonding wires in circuit signal work.

Diam., in.	Per dozen	Diam. shank, in.	Length flute, in.	Length over all, in.
9/32	$ 7.00	9/32	1¾	3
⅜	11.00	9/32	1¾	3
⅜	11.00	⅜	1¾	3

9/32 in., one dozen; ⅜ in., one-half dozen in a box.

TWIST DRILLS

CLEVELAND BLACKSMITHS', ½ INCH SHANK, SHORT SET



No. 120—Carbon Steel

No. 936—High Speed Steel

Shanks ½ inch diameter and 2¼ inches long. No. 120 regularly furnished with flatted shank but will be furnished with round shank when so ordered. No. 936 has round shank in all sizes.

Diam., in.	No. 120, Each	No. 936, Each	Lgth., in.
⅛	$0.45	$1.40	4⅞
5/32	.45	1.50	5⅛
3/16	.50	1.60	5½
7/32	.55	1.75	5¾
¼	.60	1.90	6
9/32	.65	2.05	6
5/16	.70	2.20	6
11/32	.75	2.35	6
⅜	.80	2.50	6
13/32	.85	2.75	6
7/16	.90	3.00	6
15/32	.95	3.25	6
½	1.00	3.50	6
17/32	1.05	3.75	6
9/16	1.10	4.00	6
19/32	1.20	4.25	6
⅝	1.30	4.50	6
21/32	1.40	4.75	6
11/16	1.50	5.00	6
23/32	1.60	5.25	6
¾	1.70	5.50	6
25/32	1.80	5.75	6
13/16	1.90	6.00	6
27/32	2.00	6.25	6
⅞	2.10	6.50	6
29/32	2.20	6.75	6
15/16	2.30	7.25	6
31/32	2.40	7.75	6
1	2.50	8.50	6
1 1/32	2.60	....	6
1 1/16	2.70	....	6
1⅛	2.90	....	6
1 3/16	3.10	....	6
1¼	3.30	....	6

One in a package.

TWIST DRILL SETS

CLEVELAND BIT STOCK DRILLS

No. 13 Set
BIT STOCK DRILLS
CLEVELAND
TWIST DRILL COMPANY

Carbon Steel

For metal or wood.

Put up in a new, clear plastic container, 4⅜ in. wide by 7 in. long.

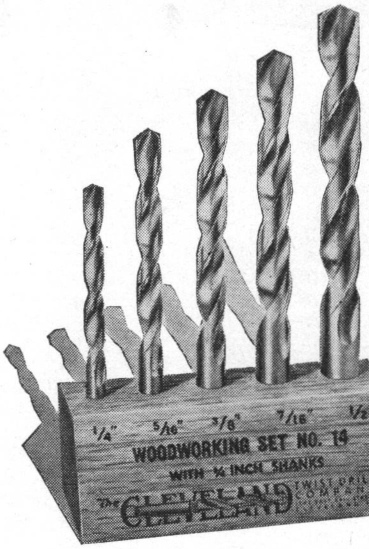
Per set

No. 13—Set, consists of 9 No. 114 bit stock drills; sizes 1/16, 3/32, ⅛, 5/32, 3/16, 7/32, ¼, 5/16 and ⅜ in.; wt. per set 1 lb. $4.25

One set in a box.

TWIST DRILL SETS

CLEVELAND ¼ INCH SHANK DRILLS



Best Chrome Tool Steel

Highly tempered and polished.

For use in electric hand drills, drill press, breast drills and ratchet drills with ¼ in. chuck.

For drilling all types of wood and soft metals including soft sheet steel. Cut fast with little effort.

Per set

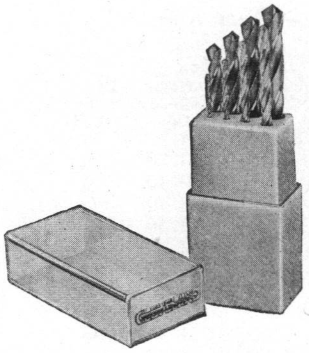
No. 14—Set, consists of 5 drills, ¼, 5/16, ⅜, 7/16 and ½ in. diameter, all with ¼ in. shank, in wood block; wt. set ¾ lb. $3.89

One set in a box.

No. 124—Open Stock Sizes

Diam., in.	Each	Length over all, in.
¼	$0.35	4
5/16	.50	4½
⅜	.65	5
7/16	.95	5½
½	1.35	6

STRAIGHT SHANK DRILLS



Sets consist of 8 straight shank drills, one each 1/16, 3/32, ⅛, 5/32, 3/16, 7/32, ¼ and 9/32 in. In plastic container.

Per set

No. 26—No. 108 carbon steel drills; wt. per set ½ lb. $1.90

No. 57—Cle-Forge No. 917 high speed drills; wt. per set ½ lb. .. 3.55

Twelve sets in a carton.

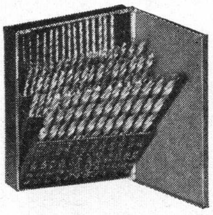
TWIST DRILL SETS

CLEVELAND
STRAIGHT SHANK DRILLS

Metal containers, made to hold straight shank drill sets for jobbers, wire gauge and letter sizes, are compact and require little space.

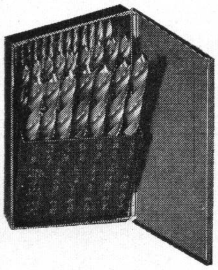
Drills are always ready for instant selection.

Drill sizes are prominently marked on the face of the hinged compartments giving fraction, wire gauge number, or letter size and decimal equivalent of each.



No. 84 set holds No. 918 wire gauge size high speed drills, No. 1 to No. 60.

Per set
No. 84—Cle-Forge high speed drills only; wt. per set 3/4 lb. $18.85
Each
No. 460—Container only for above .$3.75

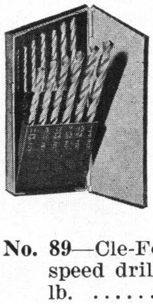


No. 55 set holds No. 919 letter size high speed drills, A to Z.

Per set
No. 55—Cle-Forge high speed steel drills only; wt. per set 2 lbs. ..$22.50
Each
No. 426—Container only for above .$4.00

Holds fraction size No. 108 carbon or No. 917 high speed drills from 1/16 to 1/2 in. by 64ths.

Per set
No. 51—No. 108 carbon drills only; wt. per set 2 1/4 lbs. $12.50
No. 54—Cle-Forge No. 917 high speed drills only; wt. per set 2 1/4 lbs. 24.75
Each
No. 429—Container only for above .$4.50



No. 89 set holds fraction size No. 917 high speed drills, 1/16 to 1/4 in. by 64ths.

Per set
No. 89—Cle-Forge No. 917 high speed drills only; wt. per set 1/4 lb. $4.85
Each
No. 413—Container only for above .$1.50

No. 6 set holds fraction size No. 108 carbon steel drills 1/16 to 1/2 in. by 32nds.

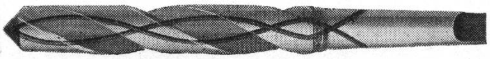
Per set
No. 6—No. 108 carbon steel drills only; wt. per set 1 1/4 lbs. $7.00
Each
No. 415—Container only for above .$2.35

All above, open stock.

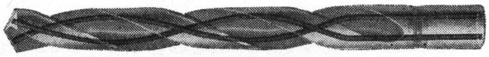
SPECIAL PURPOSE DRILLS

CLEVELAND

OIL HOLE DRILLS



Taper Shank
No. 926A—High Speed Steel



Straight Shank
No. 929A—High Speed Steel

These drills are furnished with oil holes through the solid metal.

They are used largely in screw machine and turret lathe production work. In operation, oil is forced under high pressure through the holes to the cutting edges, and serves as a lubricant coolant and also, because of its high pressure, as an aid in ejecting the chips.

Prices on Request

"HY-SPIRAL" TYPE DRILLS

Straight Shank, Regular Short Set Length
High Speed Steel

No. 955—Letter Sizes
No. 956—Wire Gauge Sizes
No. 957—Fraction Sizes

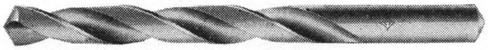
This type of drill was developed especially for the drilling of deep holes in materials and alloys of low tensile strength, such as aluminum, magnesium, copper, die casting materials, some of the plastic materials, wood, slate and marble.

Its wide, highly polished flutes and high spiral facilitate the rapid removal of large volumes of chips. Occasional applications in the drilling of the softer steels, free machining brasses and bronzes, and free machining stainless steels have proven successful. In screw machine drilling, some successful applications have been made in the drilling of screw stock and similar materials.

This same type of drill can be specially made with heavier cross section for added strength and has, on many jobs, proven satisfactory in drilling deeper holes in ordinary commercial steels.

List prices and discounts same as Nos. 917, 918 and 919.

DRILLS FOR BRASS



Straight Shank, Regular Short Set Length
High Speed Steel

No. 960—Fraction Sizes
No. 961—Wire Gauge Sizes

These drills have been designed primarily for use in brass; however, in many cases, successful applications have been made in the drilling of some of the aluminum and magnesium alloys, as well as the drilling of the softer steels particularly in horizontal drilling. Their mechanical construction is such that they will rapidly remove the large volume of chips formed by the high rates of penetration or deep holes.

List prices same as Nos. 917 and 918, discount less (higher priced).

DRILLS FOR NON-FERROUS METALS

Straight Shank
High Speed Steel
No. 3917—Fraction Sizes
No. 3918—Wire Gauge Sizes
No. 3919—Letter Sizes

This drill has been designed for use where a great number of holes must be drilled in non-ferrous materials. These drills are made with a smooth polished finish that permits a minimum of material freezing or building up on the tool when being used.

This tool can also be furnished specially made with short flutes and heavy construction for portable drilling of shallow holes in special materials and stainless steels. These drills are also finding applications in industries where sheet metal fabrication and construction is being used.

List prices and discounts same as Nos. 917, 918 and 919.

DRILLS FOR COTTER PINS

Straight Shank
High Speed Steel
No. 4917—Fraction Sizes
No. 4918—Wire Gauge Sizes
No. 4919—Letter Sizes

This drill has been especially designed for drilling cotter pin holes in bolts, steering knuckles, pins and similar jobs, as well as cross holes in the heads of bolts. Its heavy construction, designed to resist the exceptional strains put on this drill by this kind of work, has given it many successful applications in the drilling of some of the harder alloy steels, including the harder stainless steels.

List prices and discounts same as Nos. 917, 918 and 919.

SHORT LENGTH SCREW MACHINE DRILLS

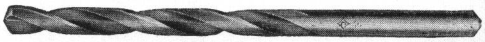
Straight Shank
No. 965—Wire Gauge Sizes
No. 967—Straight Sizes

These drills have been developed primarily for use in screw machines of all kinds, where conditions require the use of short, sturdy drills.

The drills are made with short flutes to obtain the maximum rigidity without sacrificing any of the cutting ability of these tools. This type of construction gives these drills many applications, not only in screw machine work, but also in portable drilling, sheet metal and body work. Other applications may be found in the drilling of the tougher and harder steels such as stainless, high manganese, and others, where short rigid drills are a basic tool requirement.

List prices and discounts same as Nos. 917, 918 and 919.

"BAKELITE" TYPE DRILLS



Straight Shank, Regular Short Set Length
High Speed Steel
No. 923—Letter Sizes
No. 924—Fraction Sizes
No. 925—Wire Gauge Sizes

This drill has been developed for use in fibre, hard rubber, asbestos, bakelite and other molded and extruded plastic materials. It has wide polished flutes to reduce the chip friction to a minimum and a 90° included angle point.

Also excellent for horizontal drilling in low carbon steels and for use in screw machines.

List prices same as Nos. 917, 918 and 919; discount less (higher priced).

DRILL CABINETS

CLEVELAND

TWIST DRILLS
AND
REAMERS

All Steel

Both exterior and interior of cabinet and drawers are finished in grey lacquer. Lettering on the outside is in red, black and silver. Drawers are labeled with list numbers for proper drill location.

Cabinet and drawers are made of heavy sheet steel. Individual parts are electrically welded to insure rigidity and durability.

Each of the drawers is divided and from top to bottom they handle the following drills:

No. 1—Divided to hold No. 108 Carbon fraction size drills.
No. 2—Divided to hold No. 108A Carbon wire gauge drills.
No. 3—Divided to hold No. 918 Cle-Forge high speed wire gauge drills.
No. 4—Divided to hold No. 917 Cle-Forge high speed fraction size drills.
No. 5—Divided to hold No. 114 bit stock drills.
No. 6—Not divided, to hold odd tools and sets.

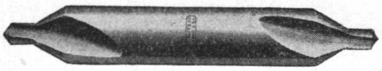
Each

No. 010—23½ in. long, 18½ in. deep, 16 in. high; wt. each empty 110 lbs.; shipping wt. each 160 lbs. $47.50

One in a crate.

COMBINED DRILLS AND COUNTERSINKS

CLEVELAND



No. 998—High Speed Steel

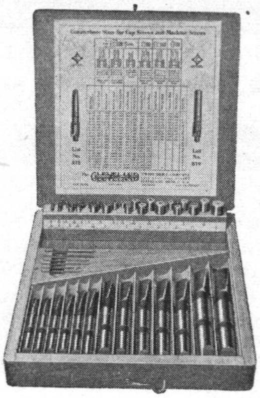
The drill ends are both of the same diameter. The included angles of the countersink are 60°. Special sizes or angles made to order.

Size	Per dozen	Diam. of body, in.	Diam. of drills, in.	Length over all, in.
A-1	$ 8.00	⅛	3/64	1¼
C-2	8.00	13/64	1/16	1⅞
D-1	8.00	15/64	5/64	2
E-1	8.00	3/16	3/32	2⅛
E-2	8.00	3/16	⅛	2⅛
F-1	12.00	7/16	5/32	2¾
F-2	12.00	7/16	3/16	2¾
J-1	18.00	½	7/32	3
J-2	18.00	½	9/32	3
M-1	24.00	⅝	7/32	3¼
M-2	24.00	⅝	9/32	3¼
N-1	32.00	¾	¼	3½
N-2	32.00	¾	5/16	3½

Open stock.

COUNTERBORE AND SPOT FACER SETS

CLEVELAND



Nos. 38 and 39

High Speed Steel

Made of best grade of high speed steel with carbon steel pilots, properly heat treated and ground. The flutes are made extra long which gives extended life for regrinding and permits the counterboring and spot facing of parts which cannot be reached with a short tool.

In Hinged Cover Wood Case

No. 37 combination set contains one each of the following:

Straight shank—¼, 5/16, ⅜, 7/16 and ½ in.
Taper shank—9/16, ⅝, 11/16, ¾, 13/16, ⅞, 15/16 and 1 in.

Pilots

3/32 in. shank—⅛, 5/32, 3/16 and ¼ in.
5/32 in. shank—3/16, 7/32, ¼, 9/32 and 5/16 in.
3/16 in. shank—¼, 5/16, ⅜, 7/16 and ½ in.
¼ in. shank—5/16, ⅜, 7/16, ½, 9/16 and ⅝ in.
5/16 in. shank—⅜, 7/16, ½, 9/16 and ¾ in.

Per set

No. 37—Complete as described above; wt. per set 10¼ lbs. ...$91.35

No. 38 set contains one each taper shank counterbores, ¼, 5/16, ⅜, 7/16, ½, 9/16, ⅝, 11/16, ¾, 13/16, ⅞, 15/16 and 1 in. sizes.

No. 39 set contains one each straight shank counterbores, ¼, 5/16, ⅜, 7/16, ½, 9/16, ⅝, 11/16, ¾, 13/16, ⅞, 15/16 and 1 in. sizes.

Pilots, same as in No. 37 set above.

Per set

No. 38—Taper shank set; wt. per set 10¼ lbs. $91.35

No. 39—Straight shank set; wt. per set 10¼ lbs. 91.35

In Slide Cover Wood Case

No. 28 set contains one each taper shank counterbores, ¼, 5/16, ⅜, 7/16 and ½ in. sizes.

No. 29 set contains one each straight shank counterbores, ¼, 5/16, ⅜, 7/16 and ½ in. sizes.

Pilots

3/32 in. shank—⅛, 5/32, 3/16 and ¼ in.
5/32 in. shank—3/16, 7/32, ¼ and 5/16 in.
3/16 in. shank—¼ and 5/16 in.

Per set

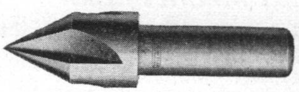
No. 28—Taper shank set; wt. per set 3½ lbs. $28.55

No. 29—Straight shank set; wt. per set 3½ lbs. 28.55

All above, one set in a box.

CENTER REAMERS

CLEVELAND



No. 610—High Speed Steel

Regularly furnished with 82 degree included angle.

Size, in.	Each	Diam. shank, in.	Diam. body, in.
3/16x¼	$1.00	3/16	¼
¼x⅜	1.15	¼	⅜
⅜x½	1.40	⅜	½
⅜x⅝	1.75	⅜	⅝
½x¾	2.15	½	¾

Open stock.

SCREW EXTRACTORS

CLEVELAND "EZY-OUT"

No. 192

Removes broken screws, studs, stay bolts, pipe fittings, etc.

Drill a hole in broken screw, insert extractor of proper size and turn to left with tap wrench.

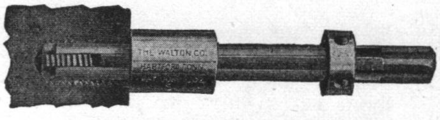
Size, Nos.	Each	Diam. at small end, in.	Diam. at large end, in.	Lgth. over all, in.	Size drill to use, in.	Wt. each, oz.
1	$0.55	.054	5/32	2	5/64	¼
2	.60	.080	3/16	2⅜	7/64	¼
3	.65	⅛	¼	2 11/16	5/32	½
4	.75	3/16	21/64	2⅞	¼	1
5	.85	¼	7/16	3⅜	17/64	2
6	1.00	⅜	19/32	3¾	13/32	3
7	1.35	½	¾	4⅛	17/32	6
8	1.85	¾	1	4⅜	13/16	12
9	2.65	1	1 9/32	4⅝	1 1/16	19
10	4.00	1¼	1 9/16	5	1 5/16	30
11	5.35	1½	1⅞	5⅝	1 9/16	46
12	6.65	1⅞	2 5/16	6¼	1 15/16	75

Note—Always use the largest possible extractor.

One in a package.

TAP EXTRACTORS

WALTON



For Removing Broken Taps

Removes broken taps at or below the surface of the work. No annealing, drilling or special tools are required. The broken tap is firmly gripped and without damage to the threads or work, is backed out easily and quickly. Speeds production and keeps down time to a minimum.

3 or 4-flute through 1 in. (specify); larger sizes 4-flute only.

Hand Tap Sizes

Tap size, in.	Each	Extra Fingers each	Tap size, in.	Each	Extra Fingers each
3/16	$1.50	$0.06	¾	$2.45	$0.20
¼	1.55	.10	⅞	2.75	.25
5/16	1.60	.10	1	3.10	.25
⅜	1.60	.12	1⅛	3.50	.25
7/16	1.70	.12	1¼	4.00	.30
½	1.85	.15	1⅜	4.50	.30
9/16	2.00	.15	1½	5.00	.35
⅝	2.20	.20			

Machine Screw Sizes

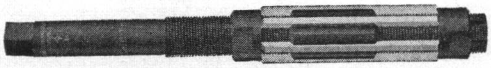
3 or 4-flute (specify).

Tap size, in.	Each	Extra Fingers each
10	$1.50	$0.06
12	1.50	.08

Open stock.

ADJUSTABLE REAMERS

CLEVELAND QUICK-SET



No. 148—Carbon Steel

Bodies made of tough machinery steel. They are threaded as illustrated and the tool is adjusted by loosening one nut and tightening the other nut. This moves the blades in the slots, which are milled with taper bottoms in the body. The blades are hardened and ground to close limits. Worn blades are easily replaced.

Size No. 8/A to 5/A inclusive are furnished with 4 blades, larger sizes with 6 blades per set.

Size, Nos.	Each	Dimensions, in.	Length over all, in.	Length cutting edge, in.	**Extra Blades,** Per set	**Extra Nuts,** each
8A	$ 3.50	¼ to 9/32	3¼	1 11/32	$1.00	$0.25
7A	3.50	9/32 to 5/16	3½	1 11/32	1.00	.25
6A	3.50	5/16 to 11/32	4⅛	1½	1.00	.25
5A	3.50	11/32 to ⅜	4⅜	1½	1.00	.25
4/A	3.50	⅜ to 13/32	4¾	1½	1.50	.25
3/A	4.00	13/32 to 7/16	5	1½	1.80	.30
2/A	4.00	7/16 to 15/32	5¼	1⅝	1.80	.30
A	4.50	15/32 to 17/32	5½	1⅝	1.80	.30
B	4.50	17/32 to 19/32	5¾	1 13/16	1.80	.30
C	4.75	19/32 to 21/32	6½	2 1/16	1.80	.30
D	4.75	21/32 to 23/32	6¾	2 3/16	1.80	.30
E	5.00	23/32 to 25/32	7	2½	2.10	.35
F	5.00	25/32 to 27/32	7⅜	2⅝	2.10	.35
G	5.50	27/32 to 15/16	8	3	2.40	.40
H	5.80	15/16 to 1 1/16	9	3¼	2.40	.40
I	7.00	1 1/16 to 1 3/16	10	3⅜	2.70	.45
J	8.00	1 3/16 to 1 11/32	11	3⅞	2.70	.45
K	10.00	1 11/32 to 1½	12	4¼	3.80	.50
L	11.50	1½ to 1 13/16	14	4 7/16	3.90	.60
M	15.00	1 13/16 to 2 7/32	16	5	4.20	.70
N	25.00	2 7/32 to 2¾	18	4 13/16	5.40	.90
O	35.00	2¾ to 3 11/32	20	5 3/16	7.20	1.20

One in a box.

Note—In ordering blades, be sure to specify letter size stamped in shank of reamer.

IN SETS

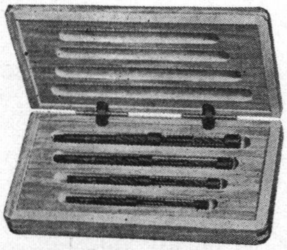
An ideal set for garages and repair shops which require reamers in a wide range of sizes.

This set will handle reaming jobs from 15/32 in. to 1½ in.

Per set

No. 44—Set, consists of 11 sizes of reamers, one each of sizes A to K incl., put up in a polished wood case with hinged cover and receptacles for extra blades; wt. per set 16¼ lbs. $64.80

One set in a box.



Especially useful in garages, repair shops or machine shops where smaller size holes must be reamed.

This set will handle reaming jobs from ¼ in. to ⅜ in.

Per set

No. 43—Set, consists of 4 sizes of Quick-Set reamers, one each of sizes 8A, 7A, 6A and 5A; put up in a wooden case with hinged cover; wt. per set ¾ lb. $14.00

One set in a box.

CHUCKING REAMERS

CLEVELAND STRAIGHT SHANK, ECCENTRIC FLUTES

No. 630—High Speed Steel

Reamers for brass or bronze require special clearance and are so furnished on request.

All sizes and dimensions not listed are special and subject to special prices.

Diam., in.	Each	Diam. of shk., in.	Lgth. of flute, in.	Length over all, in.	Diam., in.	Each	Diam. of shk., in.	Lgth. of flute, in.	Length over all, in.
⅛	$2.00	7/64	⅞	3½	23/32	$ 6.75	9/16	2¼	9
5/32	2.50	9/64	1	4	¾	6.75	⅝	2½	9½
3/16	2.50	11/64	1⅛	4½	25/32	7.25	⅝	2½	9½
7/32	3.00	13/64	1¼	5	13/16	7.25	⅝	2½	9½
¼	3.00	15/64	1½	6	27/32	8.00	⅝	2½	9½
9/32	3.25	15/64	1½	6	⅞	8.00	¾	2⅝	10
5/16	3.25	9/32	1½	6	29/32	9.00	¾	2⅝	10
11/32	3.75	9/32	1½	6	15/16	9.00	¾	2⅝	10
⅜	3.75	5/16	1¾	7	31/32	10.00	¾	2⅝	10
13/32	4.25	5/16	1¾	7	1	10.00	⅞	2¾	10½
7/16	4.25	⅜	1¾	7	1 1/16	11.25	⅞	2¾	10½
15/32	4.75	⅜	1¾	7	1⅛	12.50	⅞	2⅞	11
½	4.75	7/16	2	8	1 3/16	13.75	1	2⅞	11
17/32	5.25	7/16	2	8	1¼	15.25	1	3	11½
9/16	5.25	7/16	2	8	1 5/16	17.00	1	3	11½
19/32	5.75	7/16	2	8	1⅜	18.75	1	3¼	12
⅝	5.75	9/16	2¼	9	1 7/16	20.50	1¼	3¼	12
21/32	6.25	9/16	2¼	9	1½	22.25	1¼	3½	12½
11/16	6.25	9/16	2¼	9					

CLEVELAND TAPER SHANK, ECCENTRIC FLUTES

No. 632—High Speed Steel

¼ to 19/32 in. diameters have No. 1 taper shank; ⅝ to 29/32 in., No. 2 taper shank; 15/16 to 1 3/16 in., No. 3 taper shank; 1¼ to 1½ in., No. 4 taper shank.

Diam., in.	Each	Length of flute, in.	Length over all, in.	Diam., in.	Each	Length of flute, in.	Length over all, in.
¼	$3.50	1½	6	25/32	$ 8.00	2½	9½
9/32	3.75	1½	6	13/16	8.00	2½	9½
5/16	3.75	1½	6	27/32	9.00	2½	9½
11/32	4.25	1½	6	⅞	9.00	2⅝	10
⅜	4.25	1¾	7	29/32	10.00	2⅝	10
13/32	4.75	1¾	7	15/16	10.00	2⅝	10
7/16	4.75	1¾	7	31/32	11.00	2⅝	10
15/32	5.25	1¾	7	1	11.00	2¾	10½
½	5.25	2	8	1 1/16	12.25	2¾	10½
17/32	5.75	2	8	1⅛	13.50	2⅞	11
9/16	5.75	2	8	1 3/16	14.75	2⅞	11
19/32	6.25	2	8	1¼	16.25	3	11½
⅝	6.25	2¼	9	1 5/16	18.00	3	11½
21/32	6.75	2¼	9	1⅜	19.75	3¼	12
11/16	6.75	2¼	9	1 7/16	21.50	3¼	12
23/32	7.25	2¼	9	1½	23.25	3½	12½
¾	7.25	2½	9½				

All above, sizes to ½ in., twenty-four in a package; 17/32 to 1 in., six in a banded package; larger sizes, one in a package.

CHUCKING REAMERS

"PEERLESS" STRAIGHT SHANK

No. 503—High Speed Steel

Dia., in.	Each	Dia. shank, in.	Lgth. flute, in.	Lgth. over all, in.
½	$2.50	7/16	1	8
17/32	2.60	7/16	1	8
9/16	2.70	7/16	1⅛	8
19/32	2.80	7/16	1⅛	8
⅝	2.90	9/16	1¼	9
21/32	3.00	9/16	1¼	9
11/16	3.15	9/16	1¼	9
23/32	3.30	9/16	1¼	9
¾	3.45	⅝	1⅜	9½
25/32	3.60	⅝	1⅜	9½
13/16	3.80	⅝	1⅜	9½
27/32	4.00	⅝	1⅜	9½
⅞	4.25	¾	1½	10
29/32	$4.50	¾	1½	10
15/16	4.75	¾	1½	10
31/32	5.00	¾	1½	10
1	5.20	⅞	1⅝	10½
1 1/16	5.50	⅞	1⅝	10½
1⅛	5.85	⅞	1¾	11
1 3/16	6.20	1	1¾	11
1¼	6.60	1	1⅞	11½
1 5/16	6.85	1	1⅞	11½
1⅜	7.20	1	2	12
1 7/16	7.55	1¼	2	12
1½	7.90	1¼	2⅛	12½

"PEERLESS" STRAIGHT SHANK EXPANSION

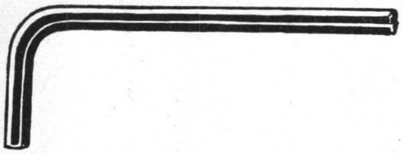
No. 504—High Speed Steel

The expansion feature is designed to maintain the initial size by compensating for wear at the cutting end. The expanding pins should never be loosened in an attempt to use the reamers for a size smaller than that to which the tools were originally circle ground.

Dia., in.	Each	Dia. shank, in.	Lgth. flute, in.	Lgth. over all, in.
½	$4.25	7/16	1	8
17/32	4.40	7/16	1	8
9/16	4.50	7/16	1⅛	8
19/32	4.65	7/16	1⅛	8
⅝	4.75	9/16	1¼	9
21/32	4.90	9/16	1¼	9
11/16	5.00	9/16	1¼	9
23/32	5.25	9/16	1¼	9
¾	5.50	⅝	1⅜	9½
25/32	5.75	⅝	1⅜	9½
13/16	6.00	⅝	1⅜	9½
27/32	6.25	⅝	1⅜	9½
⅞	6.50	¾	1½	10
29/32	6.80	¾	1½	10
15/16	7.10	¾	1½	10
31/32	7.40	¾	1½	10
1	7.80	⅞	1⅝	10½
1 1/32	8.20	⅞	1⅝	10½
1 1/16	8.60	⅞	1⅝	10½
1 3/32	$ 9.00	⅞	1⅝	10½
1⅛	9.40	⅞	1¾	11
1 5/32	9.70	⅞	1¾	11
1 3/16	10.00	1	1¾	11
1 7/32	10.30	1	1¾	11
1¼	10.70	1	1⅞	11½
1 5/16	11.10	1	1⅞	11½
1⅜	11.50	1	2	12
1 7/16	12.00	1¼	2	12
1½	12.50	1¼	2⅛	12½
1 9/16	13.10	1¼	2⅛	12½
1⅝	13.70	1¼	2¼	13
1 11/16	14.30	1¼	2¼	13
1¾	15.00	1¼	2⅜	13½
1 13/16	15.70	1½	2⅜	13½
1⅞	16.40	1½	2½	14
1 15/16	17.20	1½	2½	14
2	18.00	1½	2½	14

All above, ½ in., twenty-four in a package; 17/32 to 1 in., six in a banded package; larger sizes, one in a package.

ADJUSTING WRENCHES



For Nos. 504 and 516 Expansion Chucking Reamers

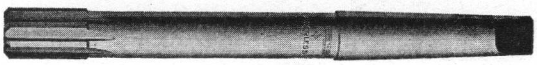
Hexagon.

Size Hex., in.	Each	Fits reamers, in.
3/32	$0.12	½ to 23/32
⅛	.12	¾ to 29/32
3/16	.12	15/16 to 1 9/32
¼	.14	1 5/16 to 1 21/32
5/16	$0.16	1 11/16 to 1 29/32
⅜	.20	1 15/16 to 2⅜
½	.38	2 13/32 to 3

Open stock.

CHUCKING REAMERS

"PEERLESS" TAPER SHANK

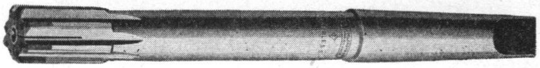


No. 515—High Speed Steel

Dia., in.	Each	Lgth. flute, in.	Lgth. over all, in.	Shank Taper
½	$2.70	1	8	No. 1
17/32	2.80	1	8	
9/16	2.90	1⅛	8	
19/32	3.00	1⅛	8	
⅝	3.10	1¼	9	No. 2
21/32	3.20	1¼	9	
11/16	3.30	1¼	9	
23/32	3.50	1¼	9	
¾	3.70	1⅜	9½	
25/32	3.90	1⅜	9½	
13/16	4.10	1⅜	9½	
27/32	4.30	1⅜	9½	
⅞	4.50	1½	10	
29/32	$4.75	1½	10	No. 2
15/16	5.00	1½	10	No. 3
31/32	5.25	1½	10	
1	5.50	1⅝	10½	
1 1/16	6.00	1⅝	10½	
1⅛	6.50	1¾	11	
1 3/16	7.00	1¾	11	
1¼	7.60	1⅞	11½	No. 4
1 5/16	7.90	1⅞	11½	
1⅜	8.20	2	12	
1 7/16	8.60	2	12	
1½	9.00	2⅛	12½	

½ in., twenty-four in a package; 17/32 to 1 in., six in a banded package; larger sizes, one in a package.

"PEERLESS" TAPER SHANK EXPANSION



No. 516—High Speed Steel

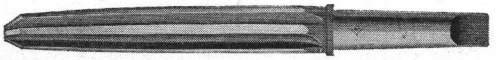
The expansion feature is designed to maintain the initial size by compensating for wear at the cutting end. The expanding pins should never be loosened in an attempt to use the reamers for a size smaller than that to which the tools were originally circle ground.

Dia., in.	Each	Lgth. flute, in.	Lgth. over all, in.	Shank Taper
½	$ 4.75	1	8	No. 1
17/32	4.90	1	8	
9/16	5.00	1⅛	8	
19/32	5.15	1⅛	8	
⅝	5.25	1¼	9	No. 2
21/32	5.40	1¼	9	
11/16	5.50	1¼	9	
23/32	5.75	1¼	9	
¾	6.00	1⅜	9½	
25/32	6.20	1⅜	9½	
13/16	6.40	1⅜	9½	
27/32	6.70	1⅜	9½	
⅞	7.00	1½	10	
29/32	7.30	1½	10	
15/16	7.60	1½	10	No. 3
31/32	7.90	1½	10	
1	8.30	1⅝	10½	
1 1/32	8.60	1⅝	10½	
1 1/16	9.00	1⅝	10½	
1 3/32	9.40	1⅝	10½	
1⅛	9.80	1¾	11	
1 5/32	10.20	1¾	11	
1 3/16	10.60	1¾	11	
1 7/32	11.00	1¾	11	
1¼	11.50	1⅞	11½	No. 4
1 5/16	12.00	1⅞	11½	
1⅜	$12.50	2	12	No. 4
1 7/16	13.10	2	12	
1½	13.60	2⅛	12½	
1 9/16	14.20	2⅛	12½	
1⅝	14.85	2¼	13	
1 11/16	15.50	2¼	13	
1¾	16.30	2⅜	13½	No. 5
1 13/16	17.10	2⅜	13½	
1⅞	18.00	2½	14	
1 15/16	18.90	2½	14	
2	19.80	2½	14	
2 1/16	20.70	2¾	14½	
2⅛	21.60	2¾	14½	
2 3/16	23.50	2¾	14½	
2¼	24.50	2¾	14½	
2 5/16	25.60	3	15	
2⅜	26.75	3	15	
2 7/16	28.00	3	15	
2½	29.30	3	15	
2 9/16	30.75	3¼	15½	
2⅝	32.25	3¼	15½	
2 11/16	33.80	3¼	15½	
2¾	35.40	3¼	15½	
2 13/16	37.00	3½	16	
2⅞	38.70	3½	16	
2 15/16	40.50	3½	16	
3	42.50	3½	16	

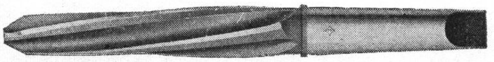
½ in., twenty-four in a package; 17/32 to 1 in., six in a banded package; larger sizes, one in a package.

TAPER BRIDGE REAMERS

CLEVELAND TAPER SHANK



No. 615—High Speed Steel; Straight Flutes



No. 616—High Speed Steel; Spiral Flutes

Especially designed for severe service and particularly adapted for use in structural iron and steel, boiler plate, etc., where precision is not absolutely required. Regularly furnished with a long 60° included angle cutting chamfer to facilitate starting the reamers where smaller point diameters would be necessary.

Be sure to specify number when ordering.

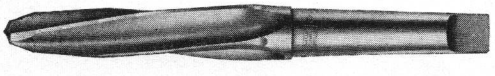
Full diam., in.	Diam. at point, in.	Each	Length of flute, in.	Length over all, in.	Shank taper
13/32	15/64	$ 3.40	4⅜	8¼	No. 2
7/16	17/64	3.40	4⅜	8¼	
15/32	17/64	3.65	5⅛	9	
½	5/16	3.65	5⅛	9	
17/32	21/64	4.00	5⅛	9	
9/16	⅜	4.00	5⅛	9	
⅝	25/64	4.70	6⅛	10	
11/16	13/32	5.50	7⅛	11¾	
¾	15/32	6.00	7⅜	12	No. 3
† 25/32	½	6.50	7⅜	12	
13/16	35/64	6.50	7⅜	12	
⅞	39/64	7.00	7⅜	12	
† 29/32	41/64	7.75	7⅜	12	
15/16	43/64	7.75	7⅜	12	
1	47/64	8.50	7⅜	12	
†1 1/32	49/64	9.50	7⅜	12	
1 1/16	13/16	9.50	7⅜	12	
1⅛	55/64	10.50	7⅜	12	
1 3/16	59/64	11.75	7⅜	12	
1¼	63/64	14.00	7⅜	13	No. 4
1 5/16	1 1/16	15.50	7⅜	13	
1⅜	1⅛	17.50	7⅜	13	
1 7/16	1 3/16	19.50	7⅜	13	
1½	1¼	22.00	7⅜	13	

†Furnished in No. 616 only.

All above, 13/32 to 15/16 in., six in a banded package; balance, one in a package.

CAR REAMERS

CLEVELAND TAPER SHANK, SHORT BODY



No. 618—High Speed Steel, Spiral Flutes

Full diam., in.	Diam. at point, in.	Each	Length of flute, in.	Length over all, in.	Shank taper
¼	5/32	$ 2.55	2½	5 7/16	No. 1
9/32	11/64	2.55	2½	5 7/16	
5/16	3/16	2.70	2¾	5 11/16	
11/32	13/64	2.80	2¾	5 11/16	
⅜	7/32	2.80	2¾	5 11/16	
13/32	15/64	3.00	2¾	6 3/16	No. 2
7/16	¼	3.10	3½	6 15/16	
15/32	¼	3.35	3½	7 1/16	
½	¼	3.45	4	7 9/16	
17/32	9/32	3.65	4	7 9/16	
9/16	5/16	3.65	4	7 9/16	
⅝	11/32	4.00	4½	8 1/16	
11/16	⅜	4.50	4½	8 13/16	No. 3
¾	13/32	5.00	5	9½	
13/16	7/16	5.35	5	9½	
⅞	15/32	5.70	5	9½	
15/16	½	6.20	5	9½	
1	½	6.75	5	9½	
1 1/16	17/32	7.50	5	9½	
1⅛	11/16	8.25	5	9½	
1 3/16	¾	9.25	5	9½	
1¼	13/16	11.00	5	9½	

One in a package.

TAPER PIN REAMERS

CLEVELAND STANDARD

No. 659—High Speed Steel, Spiral Flutes

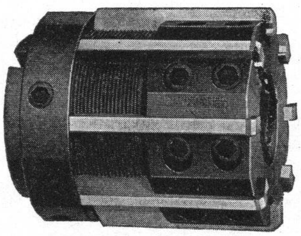
The point of each reamer will enter the hole made by the next size smaller.

Size, Nos.	Each	Diam. shank, in.	Diam. large end, in.	Diam. small end, in.	Lgth. flute, in.	Lgth. over all, in.
7/0	$3.85	5/64	.0666	.0497	13/16	1 13/16
6/0	3.85	3/32	.0806	.0611	15/16	1 15/16
5/0	3.60	7/64	.0966	.0719	1 3/16	2 3/16
4/0	3.60	⅛	.1142	.0869	1 5/16	2 5/16
3/0	3.60	9/64	.1302	.1029	1 5/16	2 5/16
2/0	3.30	5/32	.1462	.1137	1 9/16	2 9/16
0	3.10	11/64	.1638	.1287	1 11/16	2 15/16
1	3.20	3/16	.1798	.1447	1 11/16	2 15/16
2	3.30	13/64	.2008	.1605	1 15/16	3 3/16
3	3.30	15/64	.2294	.1813	2 5/16	3 11/16
4	3.60	17/64	.2604	.2071	2 9/16	4 1/16
5	3.85	5/16	.2994	.2409	2 13/16	4 5/16
6	4.70	23/64	.354	.2773	3 11/16	5 7/16
7	5.80	13/32	.422	.3297	4 7/16	6 5/16
8	7.45	7/16	.505	.3971	5 3/16	7 3/16
9	9.10	9/16	.6066	.4805	6 1/16	8 5/16
10	9.90	⅝	.7216	.5799	6 13/16	9 5/16

Size Nos. 7/0 to 7, twenty-four in a package; larger sizes six in a banded package.

ADJUSTABLE SHELL REAMERS

CLEVELAND



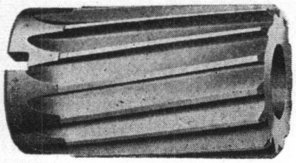
No. 606—High Speed Steel

Diam., in.	Each	Adjustment, in.	Fits Arbor Nos.	Diam. hole at large end, in.	Length over all, in.
1⅜	$15.00	3/32	5–7	½	2½
1 7/16	15.50	3/32	5–7	½	2½
1½	16.00	3/32	5–7	½	2½
1 9/16	16.50	3/32	5–7	½	2½
1⅝	17.00	3/32	5–7	½	2½
1 11/16	17.50	3/32	5–7	½	2½
1¾	18.00	7/64	6–7½	⅝	2¾
1 13/16	18.50	7/64	6–7½	⅝	2¾
1⅞	19.00	7/64	6–7½	⅝	2¾
1 15/16	19.50	7/64	6–7½	⅝	2¾
2	20.00	7/64	7–8	¾	3
2 1/16	20.75	7/64	7–8	¾	3
2⅛	21.50	7/64	7–8	¾	3
2 3/16	22.25	7/64	7–8	¾	3
2¼	23.00	7/64	7–8	¾	3
2 5/16	23.75	7/64	7–8	¾	3
2⅜	24.50	7/64	7–8	¾	3
2 7/16	25.25	7/64	7–8	¾	3
2½	26.00	9/64	8–9	1	3½
2 9/16	26.75	9/64	8–9	1	3½
2⅝	27.50	9/64	8–9	1	3½
2 11/16	28.25	9/64	8–9	1	3½
2¾	29.00	9/64	8–9	1	3½
2 13/16	29.75	9/64	8–9	1	3½
2⅞	30.50	9/64	8–9	1	3½
2 15/16	31.25	9/64	8–9	1	3½
3	32.00	11/64	9–10	1¼	3¾
3 1/16	33.00	11/64	9–10	1¼	3¾
3⅛	34.00	11/64	9–10	1¼	3¾
3 3/16	35.00	11/64	9–10	1¼	3¾
3¼	36.00	11/64	9–10	1¼	3¾
3 5/16	37.00	11/64	9–10	1¼	3¾

One in a package.

SHELL REAMERS

CLEVELAND SPIRAL FLUTED



No. 646—High Speed Steel

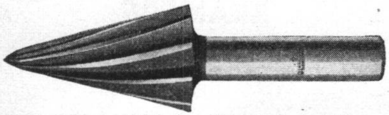
Have taper holes, the diameter given being at the large end.

Diam., in.	Each	Hole, in.	Lgth. over all, in.	Fitting arbor, Nos.	Diam., in.	Each	Hole, in.	Lgth. over all, in.	Fitting arbor, Nos.
¾	$4.25	⅜	2¼	4	1 7/16	$ 7.70	¾	3	7
13/16	4.40	½	2½	5	1½	8.25	¾	3	
⅞	4.70	½	2½		1 9/16	9.10	¾	3	
15/16	4.95	½	2½		1⅝	9.90	¾	3	
1	5.25	½	2½		1 11/16	10.75	1	3½	8
1 1/16	5.50	⅝	2¾	6	1¾	11.55	1	3½	
1⅛	5.80	⅝	2¾		1 13/16	12.40	1	3½	
1 3/16	6.05	⅝	2¾		1⅞	13.20	1	3½	
1¼	6.35	⅝	2¾		1 15/16	14.05	1	3½	
1 5/16	6.60	¾	3	7	2	14.85	1	3½	
1⅜	7.15	¾	3						

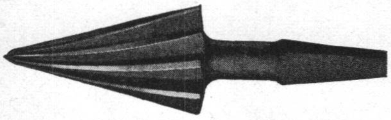
One in a package.

BURRING REAMERS

CLEVELAND



Nos. 232 to 234 for Electric Drills



Nos. 241 to 244 for Bit Brace

These reamers are primarily intended for the removal of burrs from cut pipe and conduit. They may also be used for enlarging holes in thin sections and countersinking or smoothing edges of holes in a variety of materials.

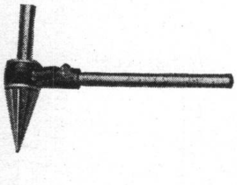
Carbon Steel, Fluted

Nos.	Each	Style of shank	Capacity pipe, in.	Diam. of point, in.	Diam. at large end, in.
232	$1.25	½″ Round	⅛ to 1	3/16	1¼
233	1.50	½″ Round	¼ to 1¼	¼	1 15/32
234	3.00	½″ Round	¼ to 2	¼	2 17/64
241	1.00	Bit Brace	⅛ to ½	3/16	47/64
242	1.25	Bit Brace	⅛ to 1	3/16	1¼
242½	1.50	Bit Brace	¼ to 1¼	¼	1 15/32
244	3.00	Bit Brace	¼ to 2	¼	2 17/64

One in a package.

PIPE REAMERS

TOLEDO RATCHET

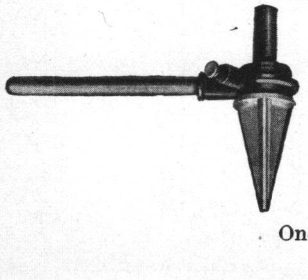


One-Piece Alloy Steel Head

Heat treated, with accurately ground teeth; readily resharpened.
Ratchet handle 16½ in. long.

Each

No. 182—For ⅛ to 2 in. pipe; wt. each 5 lbs. $8.00
One in a box.



High Speed Steel Blades

Cutter blades cast solidly in the head; readily resharpened.
Ratchet handle 16½ in. long.

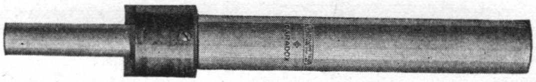
Each

No. 383—For ⅜ to 3 in. pipe; wt. each 8 lbs. $10.00

One in a box.

SHELL REAMER ARBORS

CLEVELAND



No. 335—Straight Shank

For No. 606 Adjustable Shell Reamers up to 3 5/16 in. diameter.

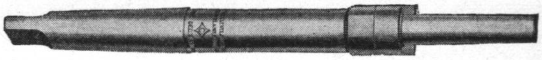
Size, Nos.	Each	Fitting sizes of No. 606 reamers, in.	Lgth. over all, in.	Diam. shank, in.	Wt. each, lbs.
5-7	$4.50	1⅜ to 1 11/16	10	1	2
6-7½	4.95	1¾ to 1 15/16	11	1⅛	2⅞
7-8	5.40	2 to 2 7/16	12	1¼	3 13/16
8-9	6.00	2½ to 2 15/16	13	1⅝	7
9-10	6.75	3 to 3 5/16	14	1¾	9⅝

No. 336—Taper Shank

For No. 606 Adjustable Shell Reamers up to 3 5/16 in. diameter.

Size, Nos.	Each	Fitting sizes of No. 606 reamers, in.	Lgth. over all, in.	Taper shank	Wt. each, lbs.
5-7	$5.40	1⅜ to 1 11/16	10	No. 3	1 11/16
6-7½	5.95	1¾ to 1 15/16	11	No. 4	2⅝
7-8	6.50	2 to 2 7/16	12		3 5/16
8-9	7.20	2½ to 2 15/16	13	No. 5	6¾
9-10	8.10	3 to 3 5/16	14		8 5/16

No. 78—Straight Shank



No. 79—Taper Shank

This Arbor is provided with a sliding collar which can be forced forward by a turn or two of the adjusting nut which bears on it, thus quickly releasing the shell tool, no matter how hard it may have become jammed on the arbor without removing the arbor from the machine.

Size, Nos.	No. 78 Straight Shank, each	No. 79 Taper Shank, each	Fitting sizes, in.	Diam. of shank No. 78, in.	Lgth. over all, in.	Taper shank, Nos.	Wt. each, lbs.
4	$4.05	$4.90	21/32 to 25/32	½	9	2	¾
5	4.50	5.40	13/16 to 1 1/32	⅝	9½	2	1
6	4.95	5.95	1 1/16 to 1 9/32	¾	10	3	1⅜
7	5.40	6.45	1 5/16 to 1 21/32	⅞	11	3	2
8	6.00	7.20	1 11/16 to 2	1⅛	12	4	3 11/16

STEEL SLEEVES OR SHELL SOCKETS

CLEVELAND

No. 104—For Taper Shank Tools

Size, Nos.	Each	Hole No.	Outside fitting socket No.	Size, Nos.	Each	Hole No.	Outside fitting socket No.
1 to 2	$1.80	1	2	2 to 5	$ 4.40	2	5
1 to 3	2.40	1	3	3 to 4	3.00	3	4
1 to 4	3.00	1	4	3 to 5	4.40	3	5
1 to 5	4.40	1	5	4 to 5	4.40	4	5
2 to 3	2.40	2	3	4 to 6	10.00	4	6
2 to 4	3.00	2	4	5 to 6	10.00	5	6

DRILL DRIFTS OR CENTER KEYS

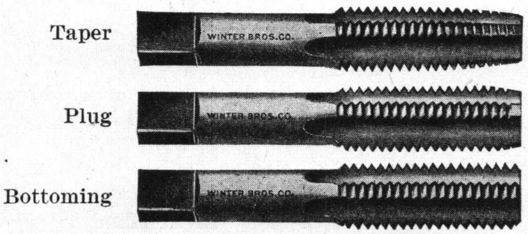
CLEVELAND

No. 105—Drop Forged Steel, Hardened

Size, Nos.	1	2	3	4
Fits sockets and sleeves, No.	1	2	3	4, 5, 6
Wt. each, oz.	1½	3¼	6	13
Each	$0.30	.35	.40	.50

All above, one in a package.

STANDARD HAND TAPS



American National form of thread in taper, plug or bottoming style.

Sizes and dimensions not listed are special. Left-hand taps are special.

Hand taps to and including ⅜ inch have shanks full diameter of thread. Taps 7/16 inch and larger have shanks smaller than the root diameter of the thread.

No. 303—Carbon Steel

Diam. of tap, in.	Each	Per set	Threads per in. NC	Threads per in. NF	Threads per in. NS	Number of flutes	Length over all, in.
1/16	$0.50	$1.50	..	..	64	3	1⅝
3/32	.40	1.20	..	..	48	3	1¾
⅛	.35	1.05	..	..	40	3	1 15/16
5/32	.35	1.05	..	..	32, 36	4	2 1/16
3/16	.40	1.20	..	..	24, 32	4	2⅜
7/32	.45	1.35	..	..	24, 32	4	2⅜
¼	.45	1.35	20	28	24, 32	4	2½
5/16	.50	1.50	18	24	32	4	2 23/32
⅜	.55	1.65	16	24	..	4	2 15/16
7/16	.60	1.80	14	20	..	4	3 5/32
½	.70	2.10	13	20	..	4	3⅜
9/16	.80	2.40	12	18	..	4	3 19/32
⅝	.90	2.70	11	18	..	4	3 13/16
11/16	1.05	3.15	..	..	11, 16	4	4 1/32
¾	1.20	3.60	10	16	..	4	4¼
⅞	1.60	4.80	9	14	..	4	4 11/16
1	2.00	6.00	8	14	..	4	5⅛
1⅛	2.25	6.75	7	12	..	4	5 7/16
1¼	2.60	7.80	7	12	..	4	5¾
1⅜	3.00	9.00	6	12	..	4	6 1/16
1½	3.50	10.50	6	12	..	4	6⅜
1⅝	4.20	12.60	..	..	5½	6	6 11/16
1¾	5.00	15.00	5	..	..	6	7
1⅞	5.80	17.40	..	..	5	6	7 5/16
2	6.70	20.10	4½	..	..	6	7⅝

High Speed Steel

No. 6303—Cut Thread

No. 5303—Commercial Ground Thread

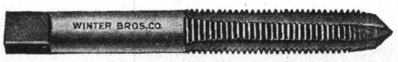
No. 7303—Precision Ground Thread

Diam. of tap, in.	Cut Thread, each	Ground Thread, each	Threads per inch NC	Threads per inch NF	Threads per inch NS	Number of flutes	Length over all, in.
¼	$0.85	$0.85	20	28	..	4	2½
5/16	.95	.95	18	24	..	4	2 23/32
⅜	1.10	1.10	16	24	..	4	2 15/16
7/16	1.30	1.30	14	20	..	4	3 5/32
½	1.55	1.55	13	20	..	4	3⅜
9/16	1.85	1.85	12	18	..	4	3 19/32
⅝	2.20	2.20	11	18	..	4	3 13/16
11/16	2.60	2.60	..	..	11, 16	4	4 1/32
¾	3.10	3.10	10	16	..	4	4¼
⅞	....	4.30	9	14	..	4	4 11/16
1	....	5.75	8	14	..	4	5⅛
1⅛	....	7.45	7	12	..	4	5 7/16
1¼	....	9.55	7	12	..	4	5¾
1⅜	....	11.95	6	12	..	4	6 1/16
1½	....	14.75	6	12	..	4	6⅜

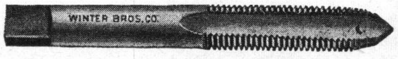
1/16 to ½ in., twelve; 9/16 to 1 in., six; 1⅛ to 2 in., one in a package.

Note—Precision ground thread taps are not regularly furnished in sizes larger than 1 inch.

MACHINE SCREW TAPS



Three Flutes



Two Flutes

Furnished with American National form of thread and standard number of flutes in taper, plug or bottoming style at regular prices. When ordered with an optional number of flutes as listed, they will be furnished in plug style only at regular prices. Left hand taps are special.

Note—When these taps are specified with an optional number of flutes as listed, they will be furnished in plug or bottoming style only at regular prices.

No. 305—Carbon Steel

Screw gauge, Nos.	Basic major diam., in.	Each	Threads per inch NC	Threads per inch NF	Threads per inch NS	No. of flutes Standard	No. of flutes Optional	Length over all, in.
0	.060	$0.50	..	80	..	2	..	1⅝
1	.073	.50	64	72	56	2	..	1 11/16
2	.086	.45	56	64	..	3	..	1¾
3	.099	.40	48	56	..	3	..	1 13/16
4	.112	.40	40	48	32, 36	3	..	1⅞
5	.125	.35	40	44	..	3	..	1 15/16
6	.138	.35	32	40	36	3	..	2
8	.164	.35	32	*36	*40	4	3	2⅛
10	.190	.40	24	32	*30	4	3	2⅜
12	.216	.45	24	28	32	4	..	2⅜
14	.242	.45	..	..	20, 24	4	..	2½

*Not regularly furnished in 3 flutes.

High Speed Steel
No. 6305—Cut Thread
No. 5305—Commercial Ground Thread
No. 7305—Precision Ground Thread

Screw gauge, Nos.	Basic major diam., in.	Nos. 6305 and 5305, each	No. 7305, each	Threads per in. NC	Threads per in. NF	Threads per in. NS	No. of flutes Standard	No. of flutes Optional
0	.060	$....	$2.40	..	80	..	2	..
1	.073	....	2.20	64	72	56	2	..
2	.086	....	2.05	56	64	..	3	2
3	.099	.85	1.50	48	56	..	3	2
4	.112	.70	1.30	40	48	36	3	2
5	.125	.70	1.30	40	44	..	3	2
6	.138	.70	1.30	32	40	..	3	2
8	.164	.70	1.30	32	*36	..	4	2, 3
10	.190	.75	1.35	24	32	..	4	2, 3
12	.216	.80	1.40	24	28	..	4	..
14	.242	.85	....	..	..	20, 24	4	..

*Not regularly furnished in 3 flutes.

Twelve in a package.

EXPLANATION OF THREAD TYPES

Cut Threads

Accepted as standard for all ordinary work but require the greatest range of tolerances in major and pitch diameters, lead and angle.

Lead tolerance: a plus or minus .003 in. in one inch of thread is permitted.

Angle Tolerance

Threads per in.	4 and coarser	4½–5½	6–9	10–28	30–64
Error in half angles, plus or minus	30′	35′	40′	45′	60′
Error in full angle	45′	53′	60′	68′	90′

Commercial Ground Threads

Closer tolerances in major and pitch diameters.

Lead tolerance: a plus or minus .0005 in. in one inch of thread is permitted.

Angle Tolerance

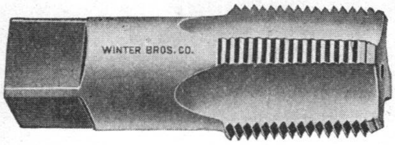
Threads per inch	6–9 incl.	10–28 incl.
Error in half angle, plus or minus	25′	30′

Precision Ground Threads

Same major diameter, lead and angle tolerances as commercial Ground Threads but the pitch diameter limits are much closer.

Note—Cut thread taps will be furnished unless ground threads are specified. Commercial ground thread taps will be furnished unless precision ground threads are specified.

TAPER PIPE TAPS



Furnished with American National Pipe form of thread (NPT).

American National form regular taper pipe taps with right or left hand thread will be furnished at standard list prices but subject to different discounts.

Sizes not listed are special.

No. 320—Carbon Steel; Right Hand

Size, in.	Each	Threads per inch	Number of flutes	Length over all, in.	Length of thread, in.	Size of square, in.
* ⅛	$ 1.00	27	4	2⅛	¾	.328
¼	1.20	18	4	2 7/16	1 1/16	.421
⅜	1.60	18	4	2 9/16	1 1/16	.531
½	2.00	14	4	3⅛	1⅜	.515
¾	2.80	14	5	3¼	1⅜	.679
1	4.40	11½	5	3¾	1¾	.843
1¼	5.00	11½	5	4	1¾	.984
1½	6.60	11½	6	4¼	1¾	1.125
2	10.00	11½	6	4½	1¾	1.406
2½	15.00	8	8	5½	2 9/16	1.687

High Speed Steel; Right Hand

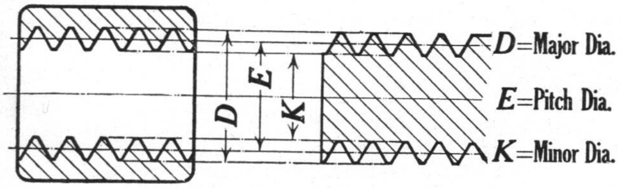
No. 6320—Cut Thread **No. 5320—Ground Thread**

No. 6319—Interrupted Thread

Size, in.	Cut Thread Regular, each	Cut Thread Interrupted, each	Ground Thread Regular, each	Threads per inch	Number of flutes Regular	Number of flutes Interrupted
* ⅛	$ 1.60	$ 2.00	$ 1.60	27	4	5
¼	1.80	2.20	1.80	18	4	5
⅜	2.30	2.80	2.30	18	4	5
½	4.40	5.25	4.40	14	4	5
¾	6.10	7.30	6.10	14	5	5
1	9.20	11.10	9.20	11½	5	5
1¼	13.10	15.75	13.10	11½	5	5
1½	17.70	21.25	17.70	11½	6	7
2	24.00	28.80	24.00	11½	6	7

⅛, ¼ and ⅜ in., twelve; ½ and ¾ in., six; 1 in., three; balance, one in a box.

*⅛ in. size can be furnished with .234 in. shank on special order.



BASIC THREAD DIMENSIONS AND TAP DRILL SIZES

American National Coarse Thread

Formerly ASME Regular for sizes 1–12; U. S. Standard for sizes ¼ in. and larger.

Size of thread and threads per inch	Major diam. D, in.	Pitch diam. E, in.	Minor diam. K, in.	Commercial tap drill to produce approx. 75% full thread	Decimal equiv. of tap drill, in.
1 x64	.0730	.0629	.0527	No. 53	.0595
2 x56	.0860	.0744	.0628	No. 50	.0700
3 x48	.0990	.0855	.0719	No. 47	.0785
4 x40	.1120	.0958	.0795	No. 43	.0890
5 x40	.1250	.1088	.0925	No. 38	.1015
6 x32	.1380	.1177	.0974	No. 36	.1065
8 x32	.1640	.1437	.1234	No. 29	.1360
10 x24	.1900	.1629	.1359	No. 25	.1495
12 x24	.2160	.1889	.1619	No. 16	.1770
¼x20	.2500	.2175	.1850	No. 7	.2010
5/16x18	.3125	.2764	.2403	F	.2570
⅜x16	.3750	.3344	.2938	5/16	.3125
7/16x14	.4375	.3911	.3447	U	.3680
½x13	.5000	.4500	.4001	27/64	.4219
9/16x12	.5625	.5084	.4542	31/64	.4844
⅝x11	.6250	.5660	.5069	17/32	.5312
¾x10	.7500	.6850	.6201	21/32	.6562
⅞x 9	.8750	.8028	.7307	49/64	.7656
1 x 8	1.0000	.9188	.8376	⅞	.8750
1⅛x 7	1.1250	1.0322	.9394	63/64	.9844
1¼x 7	1.2500	1.1572	1.0644	1 7/64	1.1094
1⅜x 6	1.3750	1.2667	1.1585	1 7/32	1.2187
1½x 6	1.5000	1.3917	1.2835	1 21/64	1.3281
1¾x 5	1.7500	1.6201	1.4902	1 35/64	1.5469
2 x 4½	2.0000	1.8557	1.7113	1 25/32	1.7812
2¼x 4½	2.2500	2.1057	1.9613	2 1/32	2.0312
2½x 4	2.5000	2.3376	2.1752	2¼	2.2500
2¾x 4	2.7500	2.5876	2.4252	2½	2.5000
3 x 4	3.0000	2.8376	2.6752	2¾	2.7500
3¼x 4	3.2500	3.0876	2.9252	3	3.0000
3½x 4	3.5000	3.3376	3.1752	3¼	3.2500
3¾x 4	3.7500	3.5876	3.4252	3½	3.5000
4 x 4	4.0000	3.8376	3.6752	3¾	3.7500

American National Fine Threads

Formerly ASME Special for sizes 0–12; SAE Standard for sizes ¼ in. and larger.

Size of thread and threads per inch	Major diam. D, in.	Pitch diam. E, in.	Minor diam. K, in.	Commercial tap drill to produce approx. 75% full thread	Decimal equiv. of tap drill, in.
0 x80	.0600	.0519	.0438	3/64	.0469
1 x72	.0730	.0640	.0550	No. 53	.0595
2 x64	.0860	.0759	.0657	No. 50	.0700
3 x56	.0990	.0874	.0758	No. 45	.0820
4 x48	.1120	.0985	.0849	No. 42	.0935
5 x44	.1250	.1102	.0955	No. 37	.1040
6 x40	.1380	.1218	.1055	No. 33	.1130
8 x36	.1640	.1460	.1279	No. 29	.1360
10 x32	.1900	.1697	.1494	No. 21	.1590
12 x28	.2160	.1928	.1696	No. 14	.1820
¼x28	.2500	.2268	.2036	No. 3	.2130
5/16x24	.3125	.2854	.2584	I	.2720
⅜x24	.3750	.3479	.3209	Q	.3320
7/16x20	.4375	.4050	.3725	25/64	.3906
½x20	.5000	.4675	.4350	29/64	.4531
9/16x18	.5625	.5264	.4903	33/64	.5156
⅝x18	.6250	.5889	.5528	37/64	.5781
¾x16	.7500	.7094	.6688	11/16	.6875
⅞x14	.8750	.8286	.7822	13/16	.8125
1 x14	1.0000	.9536	.9072	15/16	.9375
1⅛x12	1.1250	1.0709	1.0167	1 3/64	1.0469
1¼x12	1.2500	1.1959	1.1417	1 11/64	1.1719
1⅜x12	1.3750	1.3209	1.2667	1 19/64	1.2969
1½x12	1.5000	1.4459	1.3917	1 27/64	1.4219

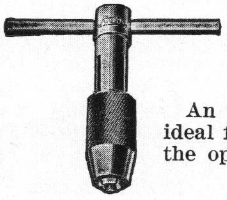
Drill List for Pipe Taps

Nominal size, in.	Drill size, in.	Nominal size, in.	Drill size, in.	Nominal size, in.	Drill size, in.
⅛	R	1	1 5/32	2½	2⅝
¼	7/16	1¼	1½	3	3¼
⅜	37/64	1½	1 47/64	3½	3¾
½	23/32	2	2 7/32	4	4¼
¾	59/64				

TAP WRENCHES

T-HANDLE

Made of carefully selected steel with hardened and tempered chuck jaws. Knurled chuck shell. Simple in design and free from delicate springs, pins, etc.

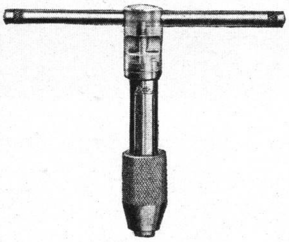


Fixed Handle

An all purpose wrench, ideal for "ordinary" out in the open tapping jobs.

Nos.	Each	For taps, in.	Length, in.	Wt. each, oz.
329	$0.90	1/16–¼	2¾	3
333	1.50	7/32–½	3⅞	8

One in a box.



Ratchet; With "Slip" Handle

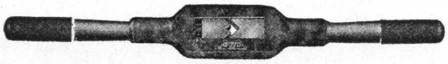
The combination of ratchet and slip handle makes this an all around wrench capable of handling most hand tapping jobs.

	Each
No. 338—For 1/16 to ¼ in. taps or Nos. 0-14 machine screw taps, 4 in. long; wt. each 6 oz.	$2.75

One in a box.

TAP AND REAMER WRENCHES

ADJUSTABLE



Forged Steel

Solid handles, one of which is forged integral with the center. Adjustment is made by turning the movable handle. Jaws are made of tool steel, carefully hardened and tempered.

Rugged, accurate and strong enough to withstand any pressure likely to be used on them.

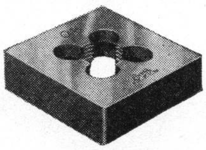
Polished, with mottled finish body.

Nos.	Each	For hand taps, in.	For pipe taps, in.	Lgth., in.	Wt. each, lbs.
4	$3.75	1/16– ⅜	.....	9	½
5	4.50	5/32– ½	⅛	11	¾
6	5.00	5/32– ¾	⅛–¼	15	1½
7	6.25	¼–1⅛	⅛–¾	19	2

One in a box.

SOLID SQUARE BOLT DIES

GREENFIELD



No. 275—Carbon Steel

American National Coarse Thread.

Used principally for dressing over bruised and rusty threads. May be used for cutting occasional new threads. No special holder or stock is furnished; any wrench large enough to fit will suffice.

Left hand dies are special.

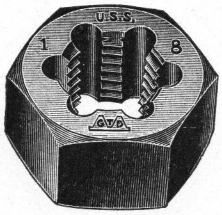
Cutting size, in.	Each	Threads per inch	Size sq., in.	Thickness, in.
¼	$2.25	20	2½	½
5/16	2.40	18	2½	½
⅜	2.50	16	2½	½
7/16	2.65	14	2½	½
½	3.00	13	2½	¾
9/16	3.15	12	2½	¾
⅝	3.25	11	2½	¾
¾	3.50	10	2½	¾
⅞	3.75	9	2½	¾
1	4.25	8	2½	1
1⅛	4.75	7	2½	1
1¼	5.25	7	2½	1
1⅜	5.75	6	2½	1
1½	6.25	6	3	1

One in a package.

Note—See page following for "OK" stock for square dies.

RETHREADING DIES

GREENFIELD



No. 377—Solid Hexagon

These dies are used only for repair work, for dressing over bruised and rusty threads.

They can be used in bit brace sockets, ratchet or monkey wrenches.

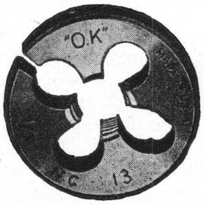
Carbon steel.

Size, in.	Each	No. of threads per in. NC	NF	NS	Size of die, in. Across flats	Thickness
¼	$0.90	20	28	..	19/32	¼
5/16	1.00	18	24	..	11/16	5/16
⅜	1.10	16	24	..	25/32	⅜
7/16	1.20	14	20	..	⅞	7/16
½	1.30	13	20	..	1 1/16	½
9/16	1.40	12	18	..	1 1/16	½
⅝	1.60	11	18	..	1¼	⅝
11/16	1.80	..	..	11, 16	1 7/16	¾
¾	2.10	10	16	..	1 7/16	¾
⅞	2.40	9	14	..	1⅝	⅞
1	2.70	8	14	..	1 13/16	1
1⅛	3.20	7	12	..	2	1
1¼	3.70	7	12	..	2 3/16	1
1⅜	4.20	6	12	..	2⅜	1
1½	4.70	6	12	..	2 9/16	1

⅛ to 1¼ in. incl., 6; 1⅜ and 1½ in., one in a package.

SCREW PLATE DIES

O.K. JR. ROUND, ADJUSTABLE



No. 3820

These dies are adjustable and are held in stock by three tapered screws which give the proper adjustment. Be sure to specify thread desired when ordering, also outside diameter size of die.

Designed for use in screw plates and are not recommended for production work in machines.

Machine Screw Sizes

13/16 in. Diameter

Size Nos.	Threads	Each	For O.K. Jr. Screwplates, Nos.
4	36	$1.00	B5, B7
6	32	1.00	B5, B7
8	32	1.00	B5, B7
10	24	1.00	B5, B7
10	32	1.00	B7
12	24	1.00	B5, B7
¼	20	1.00	B7

Fractional Sizes

13/16 in. Diameter

Size, in.	Threads	Each	For O.K. Jr. Screwplates, Nos.
1/16	64	$1.50	BB7
3/32	48	1.15	BB7
⅛	40	1.00	BB5, BB7
5/32	36	1.00	BB5, BB7
3/16	24	1.00	BB5, BB7
7/32	24	1.00	BB5, BB7
¼	20	1.00	BB5, BB7

1 Inch Diameter

Size, in.	Threads	Each	For O.K. Jr. Screwplates, Nos.
⅛	40	$1.25	C7
3/16	24	1.25	C7
¼	20	1.25	C7, 401, 405, 3100
¼	28	1.25	3100
5/16	18	1.25	C7, 401, 405, 3100
5/16	24	1.25	3100
⅜	16	1.25	C7, 401, 405, 3100
⅜	24	1.25	3100
7/16	14	1.25	C7, 3100
7/16	20	1.25	3100
½	13	1.25	C7, 3100
½	20	1.25	3100
⅛	27 NPT	1.25	3100

1½ Inch Diameter

Size, in.	Threads	Each	For O.K. Jr. Screwplates, Nos.
7/16	14	$2.00	401, 405
½	13	2.00	401, 405
⅝	11	2.00	405
¾	10	2.00	405

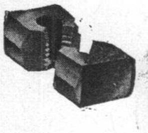
Note—See following pages for screw plates carried in stock.

All above, six in a package.

SCREW PLATE DIES

LITTLE GIANT ADJUSTABLE

No. 380



Both sides beveled to permit reversing the die so that work may be threaded through the guide or from the face.

Machine Screw Sizes

For No. A1—1¼ in. Diam. Collet

Size Nos.	Thread	Each	For Little Giant Screwplates, Nos.
4	36	$1.80	AA4
6	32	1.80	AA4
8	32	1.80	AA4
10	24	1.80	AA4
10	32	1.80	AA4
12	24	1.80	AA4

Fractional Sizes

For No. A1—1¼ in. Diam. Collet

Size, in.	Thread	Each	For Little Giant Screwplates, Nos.
¼	20	$1.80	AA4
For No. 1—2 in. Diam. Collet			
¼	20	$1.80	1, 9, 310, 311, 312
¼	28	1.80	310, 311, 312
5/16	18	1.80	1, 9, 310, 311, 312
5/16	24	1.80	310, 311, 312
⅜	16	2.20	1, 9, 310, 311, 312
⅜	24	2.20	310, 311, 312
7/16	14	2.20	1, 9, 310, 311, 312
7/16	20	2.20	310, 311, 312
½	13	2.60	1, 9, 310, 311, 312
½	20	2.60	310, 311, 312
For No. 5—2¾ in. Diam. Collet			
¼	20	$1.80	5, 7
5/16	18	1.80	5, 7
⅜	16	2.20	5, 7
7/16	14	2.20	5, 7
½	13	2.60	5, 7
9/16	12	2.60	311, 312
9/16	18	2.60	311, 312
⅝	11	3.00	5, 7, 9, 311, 312
⅝	18	3.00	311, 312
¾	10	3.40	5, 7, 9, 311, 312
¾	16	3.40	311, 312
⅞	9	4.80	7, 9, 312
⅞	14	4.80	312
1	8	4.80	7, 9, 312
1	14	4.80	312

COLLETS

LITTLE GIANT

Cap

Guide

The cap and guide form complete collet. When ordering extra collets or guides, give the outside diameter of collet and the cutting size of die for which it is required.

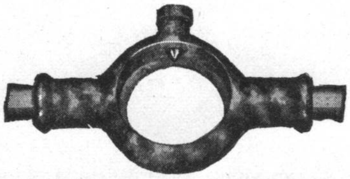
No. A1 takes all machine screw size dies, Nos. 2 to 14.

Collet, Nos.	Price each			Outs. diam., in.	Takes dies, in.
	Complete	Cap.	Guide		
A1	$1.15	$0.80	$0.35	1¼	1/16– ¼
1	1.60	1.10	.50	2	3/16– ½
5	2.60	1.75	.85	2¾	3/16–1

All above, open stock.

DIE STOCKS

LITTLE GIANT SCREW PLATE



Mottled Finished Body, Polished Handles

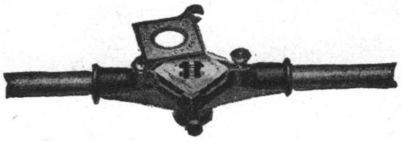
The knurling on the ends of the handle permit mechanic with greasy or oily hands to be able to take a sure grip.

Each

No. 5—For 2¾ in. diameter Little Giant collet, 23 in. long; wt. each 2½ lbs. $6.00

Open stock.

"OK" SQUARE DIE



Malleable Iron

With tubular steel handles.

Will take all solid square bolt or pipe dies in sizes indicated.

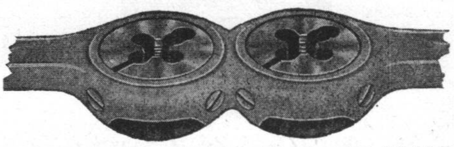
Nos.	Each	Takes square dies, in.	Wt. each, lbs.
1	$7.00	2½	2½
1½	8.00	3	3½

One in a box.

Note—See preceding page for square bolt dies; see page 240 for square pipe dies.

PUMPMAKERS' STOCKS AND DIES

G. T. D.



Double Stock, with Two 1½ in. OD "O.K." Jr. Adjustable Round Split Dies

Used in pump installation and repair work, to thread the ends of pump rods ready for the couplings.

Each double stock is furnished with two adjustable round split dies, adjusted ready for use. The guide is part of the stock.

Regularly furnished in V form of thread, 1/32 in. oversize. National form threads furnished if specified.

Each

No. 920—14⅜ in. long; cuts ⅜-14 and 7/16-12 V threads 1/32 in. oversize; wt. each 1 9/16 lbs. $6.75

One in a box.

Extra Dies

Each

⅜ **inch**—V thread, 1/32 in. oversize, 14 threads to inch; 1½ in. diameter; ½ in. thick $2.00

7/16 **inch**—V thread, 1/32 in. oversize, 12 threads to inch; 1½ in. diameter, ½ inch thick 2.00

Open stock.

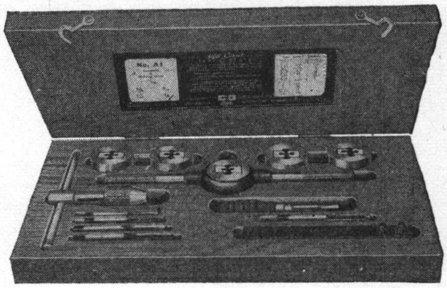
SCREW PLATES

LITTLE GIANT, SINGLE STOCK

"Little Giant" screw plates, manufactured solely by the Greenfield Tap and Die Corporation, are without doubt the best known and most widely used screw plates in the world.

"Little Giant" dies are made in two pieces, each piece having two cutting edges. The two pieces can be easily and quickly removed from the collet, and the cutting edges sharpened on a thin emery wheel.

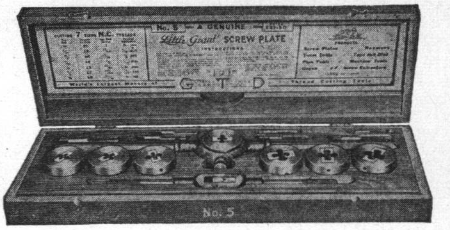
Each set in varnished hardwood box.



Machine Screw and Small Fractional Sizes

Per set

No. AA4—7 sizes taps and dies, cutting 4-36, 6-32, 8-32, 10-24, 10-32, 12-24, ¼-20 threads, 1¼ in. diam. collets, one 7½ in. stock, one No. 329 tap wrench, and one screw driver; wt. per set 3 lbs. $23.00



National Coarse (USS) Threads

Per set

No. 1—5 sizes taps and dies, cutting ¼-20, 5/16-18, ⅜-16, 7/16-14, ½-13 threads, 2 in. diameter collets, one 14½ in. stock and one 11 in. adjustable tap wrench; wt. per set 9 lbs. $26.50

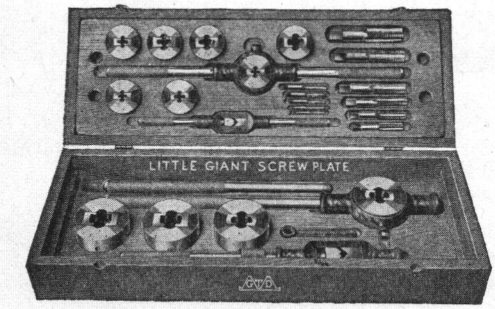
No. 5—7 sizes taps and dies, cutting ¼-20, 5/16-18, ⅜-16, 7/16-14, ½-13, ⅝-11 and ¾-10 threads, 2¾ in. diameter collets, one 23 in. stock and one 15 in. adjustable tap wrench; wt. per set 20 lbs. 42.00

No. 7—9 sizes taps and dies, cutting ¼-20, 5/16-18, ⅜-16, 7/16-14, ½-13, ⅝-11, ¾-10, ⅞-9 and 1-8 threads, 2¾ in. collets, one 26 in. stock, one each 11 and 19 in. adjustable tap wrench; wt. per set 27 lbs. 62.50

All above, one set in a box.

SCREW PLATES

LITTLE GIANT, TWO STOCK

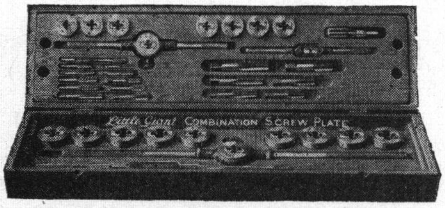


National Coarse (USS) Threads

Per set

No. 9—9 sizes taps and dies, cutting ¼-20, 5/16-18, ⅜-16, 7/16-14, ½-13, ⅝-11, ¾-10, ⅞-9 and 1-8 threads, one 2 in. collet for sizes ¼ to ½ in. dies, one 2¾ in. collet for sizes ⅝ to 1 in. dies, one 14½ in. and one 29 in. stock, one 11 in. and one 19 in. adjustable tap wrenches; wt. per set 26 lbs. $64.00

LITTLE GIANT COMBINATION



National Coarse (USS) and National Fine (SAE) Threads

These sets contain 2 inch collets for sizes ½ in. and smaller, 2¾ in. collets for sizes 9/16 in. and larger, and bit brace shank guide fitting 2 in. caps.

Per set

No. 310—10 sizes taps and dies, cutting NC (USS) ¼-20, 5/16-18, ⅜-16, 7/16-14, ½-13 threads and NF (SAE) ¼-28, 5/16-24, ¾-24, 7/16-20, ½-20 threads, one 14½ in. stock and one 11 in. adjustable tap wrench; wt. per set 14 lbs. $44.00

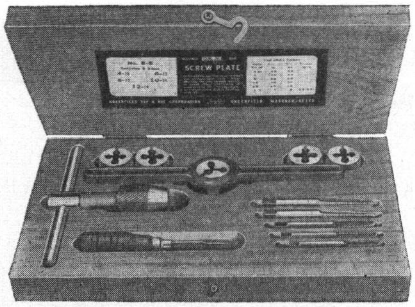
No. 311—16 sizes taps and dies, cutting NC (USS) ¼-20, 5/16-18, ⅜-16, 7/16-14, ½-13, 9/16-12, ⅝-11, ¾-10 threads and NF (SAE) ¼-28, 5/16-24, ⅜-24, 7/16-20, ½-20, 9/16-18, ⅝-18, ¾-16 threads, two stocks 14½ and 23 in. long, one 15 in. adjustable tap wrench; wt. per set 31 lbs. 80.00

No. 312—20 sizes, same as No. 311 with ⅞-9 and 1-8 NC and ⅞-14 and 1-14 NF taps and dies added; two stocks 14½ and 29 in. long, 11 and 19 in. adjustable tap wrenches; wt. per set 45 lbs. 116.00

All above, one set in a box.

SCREW PLATES

"O.K." JR.



Adjustable round split dies, held in the stock by three tapered screws which also give the proper adjustment. A small screw driver for turning the screws in the stock is furnished in each set.

Machine Screw Sizes

National coarse (USS) and National fine (SAE) threads.

Round split dies 13/16 in. diameter. Adjustable guide stock 6¼ in. long. No. 329 tap wrench.

Per set

No. B5—5 sizes taps and dies, cutting 4-36, 6-32, 8-32, 10-24 and 12-24 threads; wt. per set 1½ lbs. $11.00

No. B7—7 sizes taps and dies, cutting 4-36, 6-32, 8-32, 10-24, 10-32, 12-24 and ¼-20 threads; wt. per set 1⅞ lbs. 13.50

Small Fractional Sizes

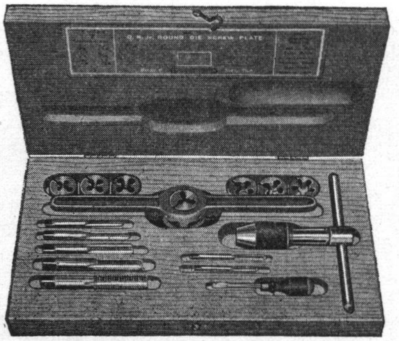
National Coarse (USS) threads.

Round split dies 13/16 in. diameter. Adjustable guide stock 6¼ in. long. No. 329 tap wrench.

Per set

No. BB5—5 sizes taps and dies, cutting ⅛-40, 5/32-36, 3/16-24, 7/32-24 and ¼-20 threads; wt. per set 1½ lbs. $11.00

No. BB7—7 sizes taps and dies, cutting 1/16-64, 3/32-48, ⅛-40, 5/32-36, 3/16-24, 7/32-24 and ¼-20 threads; wt. per set 1⅞ lbs. 14.50



National Coarse (USS) Threads

Adjustable round split dies, held in the stock by three tapered screws which also give the proper adjustment. A small screw driver for turning the screws in the stock is furnished in each set.

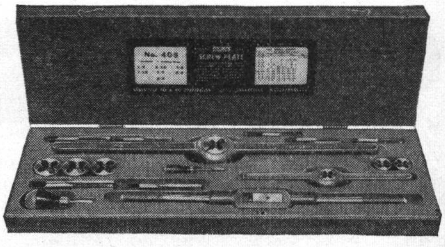
Per set

No. C7—7 sizes taps and 1 in. diam. dies, cutting ⅛-40, 3/16-24, ¼-20, 5/16-18, ⅜-16, 7/16-14 and ½-13 threads, one 9 in. stock, and one No. 333 Little Giant adjustable T-handle tap wrench; wt. per set 3½ lbs. $17.50

All above, one set in a box.

SCREW PLATES

"O.K." JR., TWO STOCK



National Coarse (USS) Threads

Adjustable round split dies held in the stock by three tapered screws which also give the proper adjustment. Two small screw drivers for turning the screws in the stock is furnished in each set.

¼ to ⅜ in. dies are 1 in. diam., 7/16 to ¾ in. dies are 1½ in. diam.

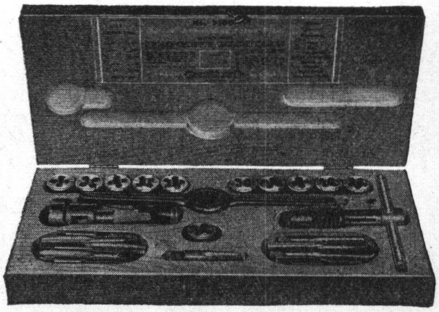
Per set

No. 401—5 sizes taps and dies, cutting ¼-20, 5/16-18, ⅜-16, 7/16-14 and ½-13 threads, two stocks 9 and 17¾ in. long, one 11 in. adjustable tap wrench, and two sizes of screw drivers; wt. per set 7½ lbs. $23.00

No. 405—7 sizes taps and dies, cutting ¼-20, 5/16-18, ⅜-16, 7/16-14, ½-13, ⅝-11 and ¾-10 threads, two stocks 9 and 17¾ in. long, one 15 in. adjustable tap wrench, and two sizes of screw drivers; wt. per set 9½ lbs. ... 28.50

One set in a box.

"O.K." JR. AUTOMOBILE



National Coarse (USS) and National Fine (SAE) Threads

Adjustable round split dies, all 1 in. outside diameter.

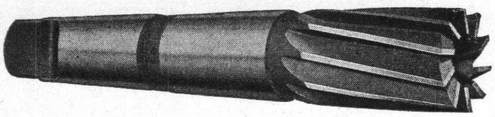
Per set

No. 3100—11 sizes taps dies, cutting NC ¼-20, 5/16-18, ⅜-16, 7/16-14, ½-13 threads, NF ¼-28, 5/16-24, ⅜-24, 7/16-20, ½-20 threads and ⅛ in. pipe thread, 9 in. stock, bit brace die holder, T-handle tap wrench; small screw driver; wt. per set 4¾ lbs. $25.00

One set in a box.

END MILLS

CLEVELAND SINGLE-END



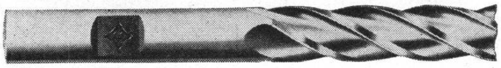
No. 675—High Speed Steel, Spiral Fluted Regular Tapered Shank

Regularly furnished with right-hand cut and right hand spiral flutes as illustrated. Have large deep center holes which will facilitate resharpening.

Diam. Mill, in.	Each	Lgth. cut, in.	Lgth. over all, in.	Shank taper, No.
¼	$3.20	⅝	3½	1
5/16	3.30	11/16	3 9/16	1
⅜	3.30	¾	3⅝	1
7/16	3.30	⅞	3¾	1
½	3.40	15/16	3 13/16	1
½	4.80	15/16	4 7/16	2
⅝	4.90	1⅛	4⅝	2
¾	4.90	1¼	4¾	2
¾	$7.00	1¼	5 9/16	3
⅞	5.70	1 7/16	4 15/16	2
⅞	7.00	1 7/16	5¾	3
1	6.60	1⅝	5⅛	2
1	7.30	1⅝	5 15/16	3
1⅛	8.40	1¾	6 1/16	3
1¼	9.60	2	6 5/16	3

No. 676—Same as No. 675 except Brown & Sharpe taper shanks.

CLEVELAND LONG SINGLE-END



No. 688—High Speed Steel; Straight Shank

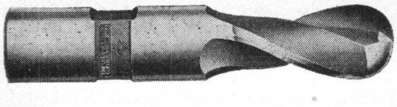
These end mills are standard with right-hand cut and right-hand spiral flutes. Flatted on shank.

Mills ⅞ in. diameter and larger have an additional flat on the end of the shank to fit pin drive holder.

Diam. Mill, in.	Each	Diam. shank, in.	Length of cut, in.	Length over all, in.
¼	$ 2.00	⅜	1¼	3⅛
5/16	2.00	⅜	1⅜	3⅛
⅜	2.00	⅜	1½	3¼
7/16	2.50	½	1¾	3¾
½	2.55	½	2	4
⅝	3.30	⅝	2½	4⅝
¾	4.00	¾	3	5¼
⅞	4.70	⅞	3½	5¾
1	5.90	1	4	6½
1⅛	7.80	1	4	6½
1¼	8.70	1	4	6½
1⅜	*....	1	4	6½
1½	10.80	1	4	6½
1¼	8.70	1¼	4	6½
1½	10.80	1¼	4	6½
1¾	*.....	1¼	4	6½
2	*.....	1¼	4	6½

*Prices on request.

CLEVELAND BALL-END



No. 690—High Speed Steel, Straight Shank, Two-Lipped

These end mills are standard with right hand cut and right hand spiral. Flatted on shank.

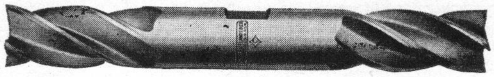
Mills ⅞ in. diameter and larger have an additional flat on the end of the shank to fit pin drive holder.

Diam. Mill, in.	Each	Diam. shank, in.	Lgth. cut, in.	Lgth. over all, in.
⅛	$2.20	⅜	⅜	2¼
3/16	2.30	⅜	½	2⅜
¼	2.30	⅜	⅝	2½
5/16	2.50	⅜	¾	2 9/16
⅜	2.50	⅜	¾	2 9/16
7/16	3.00	½	1	3 1/16
½	3.00	½	1	3 1/16
⅝	3.80	⅝	1⅜	3 9/16
¾	$ 4.40	¾	1⅝	3 15/16
⅞	5.30	⅞	2	4 5/16
1	6.30	1	2¼	4 13/16
1⅛	7.10	1	2¼	4 13/16
1¼	8.20	1¼	2½	5 1/16
1⅜	9.00	1¼	2½	5 1/16
1½	10.00	1¼	2½	5 1/16

All above, one in a package.

END MILLS

CLEVELAND DOUBLE-END



No. 682—High Speed Steel

Right-hand mills have right-hand spiral flutes, and left-hand mills have left-hand spiral flutes.

Shanks flatted for set screw.

Diam. Mill, in.	Each	Diam. shank, in.	Lgth. cut, in.	Lgth. over all, in.
⅛	$2.75	⅜	⅜	3⅛
5/32	2.75	⅜	7/16	3¼
3/16	2.75	⅜	½	3¼
7/32	2.75	⅜	9/16	3¼
¼	2.75	⅜	⅝	3⅜
9/32	2.75	⅜	11/16	3⅜
5/16	2.75	⅜	¾	3⅜
11/32	2.75	⅜	¾	3⅜
⅜	2.75	⅜	¾	3⅜
13/32	3.50	½	1	4⅛
7/16	3.50	½	1	4⅛
15/32	$3.50	½	1	4⅛
½	3.50	½	1	4⅛
9/16	4.30	⅝	1⅜	5
⅝	4.30	⅝	1⅜	5
11/16	5.25	¾	1⅝	5⅝
¾	5.25	¾	1⅝	5⅝
13/16	6.25	⅞	1⅞	6¼
⅞	6.25	⅞	1⅞	6¼
15/16	7.25	1	1⅞	6½
1	7.25	1	1⅞	6½

No. 683—Same as No. 682 except single end.

No. 684—High Speed Steel, Two-Lipped

Right-hand mills have right-hand spiral flutes, and left-hand mills have left-hand spiral flutes.

Shanks flatted for set screw.

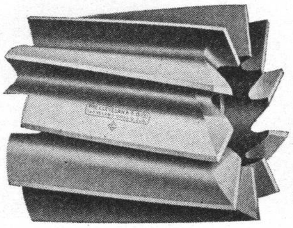
Diam. Mill, in.	Each	Diam. shank, in.	Lgth. cut, in.	Lgth. over all, in.
⅛	$2.75	⅜	⅜	3
3/16	2.75	⅜	7/16	3
¼	2.75	⅜	½	3
5/16	2.75	⅜	9/16	3
⅜	2.75	⅜	9/16	3
7/16	3.50	½	13/16	3¾
½	3.50	½	13/16	3¾
9/16	4.30	⅝	1⅛	4½
⅝	$4.30	⅝	1⅛	4½
11/16	5.25	¾	1 5/16	5
¾	5.25	¾	1 5/16	5
13/16	6.25	⅞	1 9/16	5½
⅞	6.25	⅞	1 9/16	5½
15/16	7.25	1	1⅝	5⅞
1	7.25	1	1⅝	5⅞

No. 685—Same as No. 684 except single end.

Note—In ordering above double-end end mills, specify right or left hand cut.

SHELL END MILLS

CLEVELAND SPIRAL-FLUTED



No. 671—High Speed Steel; Coarse Tooth

Furnished as regular with either right hand or left hand cut, spiral flutes only. Right hand mills have right hand spiral flutes, and left hand mills have left hand spiral flutes. Straight arbor holes.

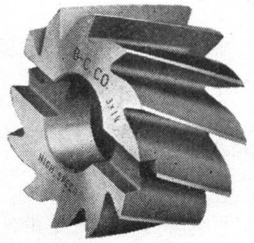
Diam. Mill, in.	Each	Length cut, in.	Hole, in.	Driving slots, in. Width	Driving slots, in. Depth
1¼	$ 5.40	1	½	¼	5/32
1½	6.00	1⅛	½	¼	5/32
1¾	6.70	1¼	¾	5/16	3/16
2	7.70	1⅜	¾	5/16	3/16
2¼	9.00	1½	1	⅜	7/32
2½	10.70	1⅝	1	⅜	7/32
2¾	12.10	1⅝	1	⅜	7/32
3	14.20	1¾	1¼	½	9/32
3½	19.20	1⅞	1¼	½	9/32

Note—In ordering shell end mills, specify right or left hand cut.

All above, one in a package.

SHELL END MILLS

PARAFORM NEW STANDARD



High Speed Steel

12° rake teeth; face ground; 18° helix angle.

Regularly furnished right hand cut with right hand spiral and left hand cut with left hand spiral.

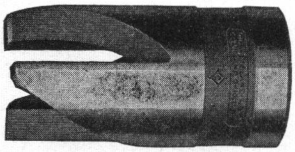
Furnished with sharp corners unless otherwise specified.

Nos.	Each	Diam. mill, in.	Length cut, in.	Hole, in.	Driving slots, in. Width	Driving slots, in. Depth	No. of teeth
E150	$5.40	1¼	1	⅝	¼	5/32	8
E154	6.00	1½	1⅛	⅝	¼	5/32	8
E158	6.70	1¾	1¼	¾	5/16	3/16	8
E162	7.70	2	1⅜	¾	5/16	3/16	10
E164	9.00	2¼	1½	¾	⅜	7/32	10
E166	10.70	2½	1⅝	¾	⅜	7/32	10
E168	12.10	2¾	1⅝	¾	⅜	7/32	10
E170	14.20	3	1¾	¾	½	9/32	12
E174	19.20	3½	1⅞	¾	½	9/32	12
E178	25.50	4	2¼	1	⅝	⅜	14
E182	30.80	4½	2¼	1	⅝	⅜	14
E186	36.70	5	2¼	1	⅝	⅜	16
E190	42.10	5½	2¼	1	¾	7/16	16
E194	50.20	6	2¼	1	¾	7/16	16

Open stock.

HOLLOW MILLS

CLEVELAND PLAIN



High Speed Steel

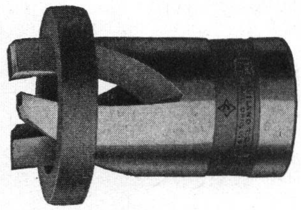
No. 660—For brass

No. 661—For steel

Size hole, in.	Each	Outs. diam., in.	Length over all, in.	Size hole, in.	Each	Outs. diam., in.	Length over all, in.
3/32	$3.60	⅝	1½	7/16	$4.25	1	2
⅛	3.60	⅝	1½	½	4.25	1	2
5/32	3.60	⅝	1½	9/16	5.55	1¼	2¼
3/16	3.60	⅝	1½	⅝	5.55	1¼	2¼
7/32	3.60	⅝	1½	11/16	6.85	1½	2½
¼	3.60	⅝	1½	¾	6.85	1½	2½
9/32	3.90	¾	1¾	13/16	6.85	1½	2½
5/16	3.90	¾	1¾	⅞	8.45	1¾	2¾
11/32	3.90	¾	1¾	15/16	8.45	1¾	2¾
⅜	4.25	1	2	1	8.45	1¾	2¾

One in a package.

CLEVELAND ADJUSTABLE



High Speed Steel

No. 662—For brass

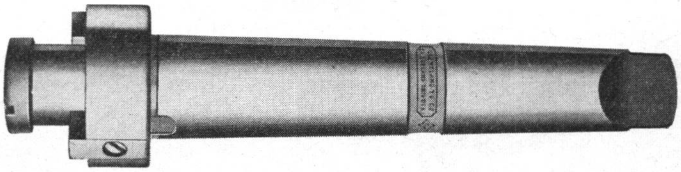
No. 663—For steel

Size hole, in.	Each	Outs. diam., in.	Length over all, in.	Size hole, in.	Each	Outs. diam., in.	Length over all, in.
3/32	$4.25	⅝	1½	7/16	$5.20	1	2
⅛	4.25	⅝	1½	½	5.20	1	2
5/32	4.25	⅝	1½	9/16	6.85	1¼	2¼
3/16	4.25	⅝	1½	⅝	6.85	1¼	2¼
7/32	4.25	⅝	1½	11/16	8.45	1½	2½
¼	4.25	⅝	1½	¾	8.45	1½	2½
9/32	4.70	¾	1¾	13/16	8.45	1½	2½
5/16	4.70	¾	1¾	⅞	10.40	1¾	2¾
11/32	4.70	¾	1¾	15/16	10.40	1¾	2¾
⅜	5.20	1	2	1	10.40	1¾	2¾

One in a package.

SHELL END MILL ARBORS

CLEVELAND



No. 196—With B & S Taper Shank

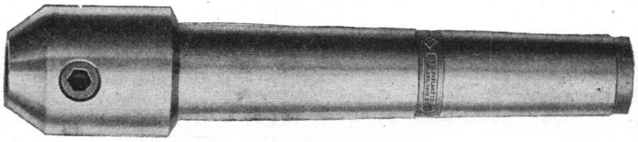
For mills with straight holes. When ordering state whether desired for right or left hand mills.

When desired these arbors can be furnished with shank tapped for draw-in bolt. Specify size of tapped hole required; also form of thread and whether right or left hand thread.

Size, Nos.	Each	Fits end mills, in.	Shank taper No.	Wt. each, lbs.
1	$8.00	1¼ to 1½	7	11/16
2	8.00	1¾ to 2	9	1⅝
3	9.75	2¼ to 2¾	10	3¼
4	10.50	3 to 3½	11	5½

DOUBLE-END MILL HOLDERS

CLEVELAND



No. 246—With Brown & Sharpe Taper Shank with Tapped Hole for Drawing-In Bolt

Diam. hole for end mill shank, in.	Each	No. of taper shank, B & S	Size of tapped hole for drawing-in bolt	Length over all, in.	Wt. each, lbs.
3/16	$6.25	7	⅜-16	4⅝	⅜
⅜	6.25	7	⅜-16	4½	7/16
⅜	6.90	9	½-13	5½	1
½	6.90	9	½-13	5 13/16	1⅛
⅝	6.90	9	½-13	6⅝	2 9/16
¾	8.10	10	⅝-11	8 7/16	2 7/16
⅞	8.75	10	⅝-11	8 7/16	3 13/16
1	10.30	11	⅝-11	9 13/16	7¼

No. 247—With Brown & Sharpe Shank with Tang

Diam. hole for end mill shank, in.	Each	No. of taper shank, B & S	Length over all, in.	Wt. each, lbs.
3/16	$6.25	7	5⅛	7/16
⅜	6.25	7	5	½
⅜	6.90	9	6⅛	1¼
½	6.90	9	6 7/16	1⅞
⅝	6.90	9	7¼	2⅞
¾	8.10	10	9⅛	2¾
⅞	8.75	10	9⅛	4 1/16
1	10.30	11	10½	7

No. 248—With Regular Taper Shank with Tapped Hole for Drawing-In Bolt

Diam. hole for end mill shank, in.	Each	No. of regular taper shank	Size of tapped hole for drawing-in bolt	Length over all, in.	Wt. each, lbs.
3/16	$6.60	2	5/16-18	4⅛	⅜
3/16	6.90	3	⅜-16	4¾	⅝
⅜	6.60	2	5/16-18	4¼	7/16
⅜	6.90	3	⅜-16	4¾	13/16
½	6.90	3	⅜-16	4 15/16	13/16
⅝	7.50	4	½-13	6 11/16	2
¾	7.80	4	½-13	6 13/16	2 1/16

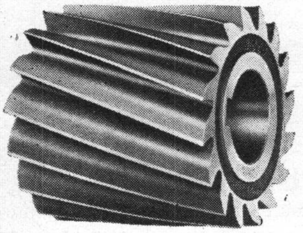
No. 249—With Regular Taper Shank with Tang

Diam. hole for end mill shank, in.	Each	No. of regular taper shank	Length over all, in.	Wt. each, lbs.
3/16	$6.60	2	4½	⅜
3/16	6.90	3	5¼	11/16
⅜	6.60	2	4⅝	½
⅜	6.90	3	5¼	13/16
½	6.90	3	5 7/16	2⅛
⅝	7.50	4	7¼	2 3/16
¾	7.80	4	7⅜	3 11/16
⅞	10.00	5	8⅜	4 3/16
1	10.60	5	8⅞	5 9/16

All above, one in a box.

PLAIN MILLING CUTTERS

PARAFORM LIGHT DUTY



12° Rake Teeth, Face Ground, 18° Helix Angle

Plain mills are intended for use on work of a slabbing nature when work is narrower than cutter itself. When used on flat work where there is a shoulder, lead end of spiral teeth should work in corner for best results shallow end teeth or side chip grooves should be ground into this end.

Best suited for moderate cuts in malleable iron, steel and cast iron.

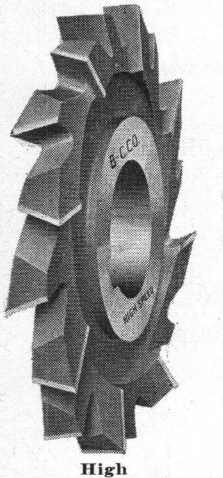
Mills with less than ¾ in. face have straight teeth and undercut sides. Larger sizes have left hand spiral teeth utilizing thrust of cut to keep spindle tight and lessen chatter.

Nos.	High Speed Steel, each	Diam. cutter, in.	Width face, in.	Size hole, in.
A2	$4.50	2¼	* ½	⅞
A3	6.00	2¼	*1	⅞
A5	3.10	2½	* 3/16	1
A6	4.10	2½	* ¼	1
A7	4.30	2½	* 5/16	1
A8	4.60	2½	* ⅜	1
A9	4.90	2½	* 7/16	1
A10	5.10	2½	* ½	1
A12	5.60	2½	* ⅝	1
A14	6.00	2½	† ¾	1
A18	6.90	2½	†1	1
A21	8.60	2½	†1½	1
A23	10.30	2½	†2	1
A25	12.10	2½	†2½	1
A27	13.70	2½	†3	1
A55	3.80	3	† 3/16	1
A56	5.00	3	† ¼	1
A57	5.40	3	† 5/16	1
A58	5.70	3	† ⅜	1
A61	5.70	3	† ⅜	1¼
A62	6.00	3	† 7/16	1¼
A63	6.40	3	† ½	1¼
A65	$6.90	3	† ⅝	1¼
A67	7.50	3	¾	1¼
A69	8.10	3	⅞	1¼
A71	8.70	3	1	1¼
A72	9.90	3	1¼	1¼
A73	11.00	3	1½	1¼
A75	13.40	3	2	1¼
A77	18.10	3	3	1¼
A105	7.10	4	¼	1
A106	7.70	4	5/16	1
A107	8.20	4	⅜	1
A108	7.10	4	¼	1¼
A109	7.70	4	5/16	1¼
A110	8.20	4	⅜	1¼
A112	9.30	4	½	1¼
A114	10.20	4	⅝	1¼
A116	11.20	4	¾	1¼
A119	13.10	4	1	1¼
A121	17.10	4	1½	1¼
A123	21.00	4	2	1¼
A125	28.90	4	3	1¼
A127	36.80	4	4	1¼

*Straight teeth and undercut sides. †Left hand spiral teeth.

SIDE MILLING CUTTERS

STAGGERED TOOTH



15° Rake Teeth, Face Ground

Alternate spiral of teeth combined with rake and side chip clearance gives correct cutting action which permits higher speeds and feeds and reduces chatter. Sides have no cutting clearance, but are undercut to avoid dragging and scoring the work.

When wide slots are to be milled, two or more cutters should be used instead of one wide cutter. Staggered teeth thus formed act as chip breakers.

Ideal for deep slotting. The hub of cutter is the limit of the depth of cut.

Nos.	High Speed Steel, each	Dia. cutter, in.	Width face, in.	Size hole, in.
B300	$6.80	2½	¼	⅞
B301	7.10	2½	5/16	⅞
B302	7.50	2½	⅜	⅞
B303	8.30	2½	½	⅞
B304	7.80	3	3/16	1
B305	8.10	3	¼	1
B306	8.60	3	5/16	1
B307	9.00	3	⅜	1
B308	10.00	3	½	1¼
B309	10.80	3	⅝	1¼
B310	11.50	3	¾	1¼
B316	11.30	4	¼	1¼
B317	12.00	4	5/16	1¼
B318	12.60	4	⅜	1¼
B319	13.40	4	7/16	1¼
B320	14.10	4	½	1¼
B321	$15.40	4	⅝	1¼
B322	16.60	4	¾	1¼
B323	17.90	4	⅞	1¼
B324	18.90	5	½	1¼
B325	20.90	5	⅝	1¼
B326	22.80	5	¾	1¼
B327	21.80	6	⅜	1¼
B328	24.60	6	½	1¼
B329	27.30	6	⅝	1¼
B330	30.00	6	¾	1¼
B331	32.80	6	⅞	1¼
B332	35.50	6	1	1¼
B333	42.40	8	⅜	1½
B334	47.40	8	½	1½
B335	52.30	8	⅝	1½
B336	57.10	8	¾	1½

All above, open stock.

SIDE MILLING CUTTERS

PARAFORM LIGHT DUTY

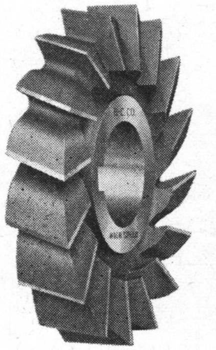
12° Rake Teeth, Face Ground, Undercut Sides

Standard side mills are made with rake teeth and undercut sides and are used for side milling, straddle milling and slotting, and do very well for light duty work.

Nos.	High Speed Steel, each	Diam. cutter, in.	Width face, in.	Size hole, in.
B1	$4.20	2	3/16	½
B2	4.40	2	¼	½
B4	4.80	2	⅜	½
B5	4.20	2	3/16	⅝
B6	4.40	2	¼	⅝
B8	4.80	2	⅜	⅝
B9	5.40	2½	¼	⅞
B10	5.70	2½	5/16	⅞
B11	6.00	2½	⅜	⅞
B13	6.60	2½	½	⅞
B19	6.50	3	¼	1
B20	6.90	3	5/16	1
B21	7.20	3	⅜	1
B22	7.60	3	7/16	1
B23	8.00	3	½	1
B32A	9.00	4	¼	1
B32B	10.10	4	⅜	1
B39	11.30	4	½	1
B41	12.30	4	⅝	1
B43	13.30	4	¾	1
B45	14.30	4	⅞	1
B50	$11.30	4	½	1¼
B51	12.30	4	⅝	1¼
B51A	13.30	4	¾	1¼
B51B	14.30	4	⅞	1¼
B59	15.10	5	½	1
B60	16.70	5	⅝	1
B62	18.20	5	¾	1
B66A	15.10	5	½	1¼
B66B	16.70	5	⅝	1¼
B67	18.20	5	¾	1¼
B67B	21.30	5	1	1¼
B70A	19.70	6	½	1
B70B	19.70	6	½	1¼
B70C	21.80	6	⅝	1¼
B71	24.00	6	¾	1
B71B	24.00	6	¾	1¼
B73	28.40	6	1	1¼
B75	34.40	7	¾	1¼
B76	40.30	7	1	1¼
B79	45.70	8	¾	1¼
B80	53.40	8	1	1¼

HALF SIDE MILLING CUTTERS

PARAFORM



20° Spiral Teeth, 12° Rake Teeth, Face Ground, Undercut on Rake Teeth

The spiral and rake teeth give the shearing action necessary for good cutting. The depth of the side teeth is greater than the combined depth of both sides of standard type cutters, giving much longer life.

Used for side milling or, in pairs, for straddle milling.

In ordering state whether right or left hand cut is desired.

Nos.	High Speed Steel, each	Diam. cutter, in.	Width face, in.	Size hole, in.	Width through hub, in.	No. of teeth
B400	$13.30	4	¾	1¼	⅝	16
B404	18.20	5	¾	1¼	⅝	18
B407A	24.00	6	¾	1¼	⅝	20
B407	28.40	6	1	1½	⅞	20
B410A	34.40	7	¾	1½	⅝	22
B410	40.30	7	1	1½	⅞	22
B413A	45.70	8	¾	1½	⅝	24
B413	53.40	8	1	1½	⅞	24

All above, open stock.

ANGLE MILLING CUTTERS

SINGLE

Face Ground, Radial Teeth

45° and 60° included angles.

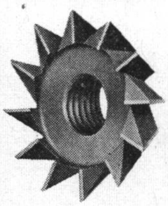
Have teeth on the angular face and on the side adjacent to the largest diameters. Can be furnished either right or left hand cut.

Suitable for cutting teeth of milling cutters, milling dovetails or any other angular cutting.

Nos.	High Speed Steel, each	Diam. cutter, in.	Thickness, in.	Size hole, in.	No. of teeth
J1	$6.60	2½	½	⅞	18
J2	7.20	2¾	½	1	20
J3	8.00	3	½	1¼	20

Note—In ordering, specify 45° or 60° including angle, and whether right or left hand.

Threaded Holes, Face Ground, Radial Teeth

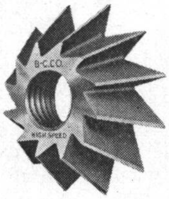


Left Hand

60° included angle.

Used with screw arbors.

Note—In ordering, specify right or left hand angle and right or left hand thread.



Right Hand

Nos.	High Speed Steel, each	Diam. cutter, in.	Thickness, in.	Size hole, in.	Thread NF, in.	No. of teeth
J40	$5.40	1¼	7/16	⅜	24	12
J41	6.10	1⅝	9/16	½	20	12

DOUBLE

Face Ground, Radial Teeth

45°, 60° or 90° included angle.

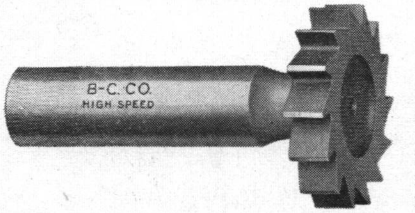
For milling angular grooves such as threads, notches, serrations, etc.

	Each
No. J31—2¼ in. diam., ½ in. thick, 1 in. hole, 20 teeth	$7.20

Note—In ordering, specify included angle.

WOODRUFF KEY SEAT CUTTERS

SHANK TYPE



5° Rake Teeth, Face Ground, Undercut Sides

Right hand cut.

½ in. diam. shank, 2 in. long.

Diameters are .010 to .020 in. larger than nominal dimensions shown to allow for resharpening.

*Nos.	Cutter, Nos.	High Speed Steel, each	Width face, in.	Diam. cutter, in.
204	1	$2.80	1/16	½
304	2	2.80	3/32	½
305	4	2.80	3/32	⅝
404	3	2.80	⅛	½
405	5	2.80	⅛	⅝
406	7	3.10	⅛	¾
505	6	2.80	5/32	⅝
506	8	3.10	5/32	¾
507	10	3.40	5/32	⅞
606	9	3.10	3/16	¾
607	11	3.40	3/16	⅞
608	13	3.80	3/16	1
609	16	4.20	3/16	1⅛
807	A	3.40	¼	⅞
808	15	$3.80	¼	1
809	18	4.20	¼	1⅛
810	21	4.60	¼	1¼
811	22	5.00	¼	1⅜
812	24	5.50	¼	1½
1008	B	4.00	5/16	1
1009	C	4.40	5/16	1⅛
1010	D	4.90	5/16	1¼
1011	23	5.40	5/16	1⅜
1012	25	5.90	5/16	1½
1210	E	4.90	⅜	1¼
1211	F	5.40	⅜	1⅜
1212	G	5.90	⅜	1½

*These numbers have been approved by the American Standards Association. The last two digits give the nominal diameter in eighths of an inch and the digits preceding the last two give the nominal width in thirty-seconds of an inch. Thus No. 204 indicates a key 2/32x4/8 or 1/16x½ inches; No. 1210 indicates a key 12/32x10/8 or ⅜x1¼ inches.

All above, open stock.

SCREW SLOTTING CUTTERS

B-C

Radial Teeth

These cutters have teeth of a fine pitch especially adapted for the slotting of screw heads, slitting copper and brass tubing and other similar work.

The sides and hole are ground. The sides have a slight undercut to hole.

Made with 72 teeth.

Nos.	High Speed Steel, each	Diam. of screw head to be slotted, in.	Thickness of cutter by Am. Std. Wire Gage, Nos.	Thickness of cutter, in.	Diam. of cutter, in.	Diam. of hole, in.
H102	$3.20	1⅛	6	.162	2¾	1
H103	3.00	1	7	.144	2¾	1
H104	2.75	⅞	8	.128	2¾	1
H105	2.50	¾	9	.114	2¾	1
H106	2.30	⅝	10	.102	2¾	1
H107	2.05	...	11	.091	2¾	1
H108	1.90	½	12	.081	2¾	1
H109	1.90	...	13	.072	2¾	1
H110	1.80	⅜	14	.064	2¾	1
H111	1.70	11/32	15	.057	2¾	1
H112	1.60	5/16	16	.051	2¾	1
H113	1.55	9/32	17	.045	2¾	1
H114	1.50	¼	18	.040	2¾	1
H115	1.50	7/32	19	.036	2¾	1
H116	1.50	3/16	20	.032	2¾	1
H117	1.50	⅛	21	.028	2¾	1
H118	1.50	...	22	.025	2¾	1
H119	1.50	...	23	.023	2¾	1
H120	1.50	...	24	.020	2¾	1

METAL SLITTING SAWS

PLAIN

5° Rake Teeth

Recommended for all ordinary slotting and cutting off of steel and cast or malleable iron; and may be used on any non-ferrous metals where the slots are not too deep.

Hollow ground on the sides, the relief starting at the cutting edge.

Saws are made with standard keyways and should be driven with a key extending into the collars on both sides.

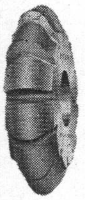
When ordering special saws state type desired, kind of material to be cut, and width of slot with allowable limits.

Nos.	High Speed Steel, each	Dia. saw, in.	Width face, in.	Size hole, in.
G 1	$2.80	2½	1/32	⅞
G 2	2.80	2½	3/64	⅞
G 3	2.80	2½	1/16	⅞
G 4	2.80	2½	3/32	⅞
G 5	2.90	2½	⅛	⅞
G 7	3.30	3	1/32	1
G 8	3.30	3	3/64	1
G 9	3.40	3	1/16	1
G10	3.40	3	3/32	1
G11	3.50	3	⅛	1
G12	3.70	3	5/32	1
G13	4.30	4	1/32	1
G14	4.40	4	3/64	1
G15	4.50	4	1/16	1
G16	4.70	4	3/32	1
G17	5.00	4	⅛	1
G18	5.20	4	5/32	1
G19	$5.50	4	3/16	1
G20	5.80	5	1/16	1
G21	6.30	5	3/32	1
G22	6.60	5	⅛	1
G23	6.60	5	⅛	1¼
G25	7.00	5	5/32	1
G26	7.40	5	3/16	1
G28	7.30	6	1/16	1
G29	8.40	6	3/32	1
G30	8.60	6	⅛	1
G31	10.40	6	3/16	1
G31A	8.60	6	⅛	1¼
G32A	10.40	6	3/16	1¼
G37	17.50	8	⅛	1
G38	17.50	8	⅛	1¼
G39	19.80	8	3/16	1¼

All above, open stock.

ROLLER CHAIN SPROCKET CUTTERS

AMERICAN STANDARD TOOTH FORM



High Speed Steel

Form relieved and may be resharpened by grinding across the faces of the teeth only. This insures maintaining the form of the cutter throughout its entire life.

Six cutters are required for each pitch to cut the range of sprocket teeth listed.

Circular pitch, in.	Diameter roll, in.	No. of teeth in sprocket	Diam. cutter, in.	Width cutter, in.	Size hole, in.
⅜	.200	7–8	2¾	15/32	1
		9–11	2¾	15/32	
		12–17	2¾	7/16	
		18–34	2¾	7/16	
		35 & Over	2¾	13/32	
½ to ⅝	.313	7–8	3	¾	1
		9–11	3⅛	¾	
		12–17	3⅛	¾	
		18–34	3⅛	23/32	
		35 & Over	3⅛	11/16	
⅝	.400	7–8	3⅛	¾	1
		9–11	3¼	¾	
		12–17	3¼	¾	
		18–34	3¼	23/32	
		35 & Over	3¼	11/16	
¾	.469	7–8	3¼	29/32	1
		9–11	3⅜	29/32	
		12–17	3⅜	⅞	
		18–34	3⅜	27/32	
		35 & Over	3⅜	13/16	
1	.563	7–8	3⅞	1¼	1¼
		9–11	3⅞	1 3/16	
		12–17	4	1 5/32	
		18–34	4	1⅛	
		35 & Over	4	1 3/32	
1 to 1¼	.625	7–8	4	1½	1¼
		9–11	4⅛	1 15/32	
		12–17	4⅛	1 15/32	
		18–34	4¼	1 13/32	
		35 & Over	4¼	1 11/32	
1¼ to 1½	.750	7–8	4⅜	1 13/16	1¼
		9–11	4½	1 25/32	
		12–17	4½	1¾	
		18–34	4⅝	1 11/16	
		35 & Over	4⅝	1⅝	
1½	.875	7–8	4½	1 13/16	1¼
		9–11	4⅝	1 25/32	
		12–17	4⅝	1¾	
		18–34	4¾	1 11/16	
		35 & Over	4¾	1⅝	
1¾	1.000	7–8	5⅛	2 3/32	1½
		9–11	5¼	2 1/16	
		12–17	5⅜	2 1/32	
		18–34	5½	1 31/32	
		35 & Over	5½	1⅞	
2	1.125	7–8	5½	2 13/32	1½
		9–11	5⅝	2⅜	
		12–17	5¾	2 5/16	
		18–34	5⅞	2¼	
		35 & Over	5⅞	2 5/32	
2½	1.5625	7–8	6⅝	3	1¾
		9–11	6¾	2 15/16	
		12–17	6⅞	2 29/32	
		18–34	7	2¾	
		35 & Over	7⅛	2 11/16	
3	1.900	7–8	7¾	3 19/32	2
		9–11	7⅞	3 17/32	
		12–17	8	3 15/32	
		18–34	8	3 11/32	
		35 & Over	8¼	3 7/32	

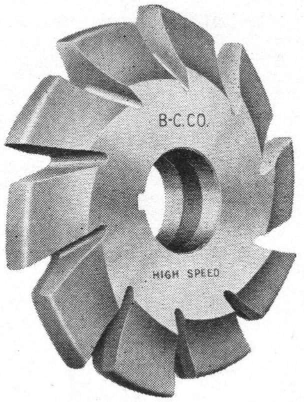
Prices on Request

Note—In ordering, specify pitch, diameter of roll, and number of teeth in sprocket.

Note—Sizes larger than 1 in. furnished on special order only.

INVOLUTE GEAR CUTTERS

BARBER-COLMAN



For Teeth of Gear Wheels; Radial Teeth

High Speed Steel

All gears cut with cutters of the same pitch are interchangeable.

Involute gear cutters have form relieved teeth, retain the original tooth form throughout their life.

Stocked with 14½° pressure angle.

Involute gear cutters will cut a range of teeth for each pitch. They are made in eight groups as follows:

No. 1 will cut gears from 135 teeth to a rack
No. 2 will cut gears from 55 teeth to 134 teeth
No. 3 will cut gears from 35 teeth to 54 teeth
No. 4 will cut gears from 26 teeth to 34 teeth
No. 5 will cut gears from 21 teeth to 25 teeth
No. 6 will cut gears from 17 teeth to 20 teeth
No. 7 will cut gears from 14 teeth to 16 teeth
No. 8 will cut gears from 12 teeth to 13 teeth

Diametral pitch	Each	Diam. cutters, in.	Size hole, in.	Diametral pitch	Each	Diam. cutters, in.	Size hole, in.
*1	On	8½	2	12	$7.20	2¼	⅞
*1¼	re-	7¾	2	14	6.90	2⅛	⅞
*1½	quest	7	1¾	16	6.90	2⅛	⅞
1¾	$60.00	6½	1¾	18	6.20	2	⅞
2	44.50	5¾	1½	20	6.20	2	⅞
2½	40.00	5¾	1½	22	6.20	2	⅞
3	25.10	4¾	1¼	24	6.00	1¾	⅞
4	19.20	4¼	1¼	26	5.80	1¾	⅞
5	15.50	3¾	1¼	28	5.80	1¾	⅞
6	12.30	3⅛	1	30	5.80	1¾	⅞
7	10.70	2⅞	1	32	5.80	1¾	⅞
8	10.20	2⅞	1	36	5.80	1¾	⅞
9	9.00	2¾	1	40	5.80	1¾	⅞
10	8.20	2⅜	⅞	48	5.80	1¾	⅞
11	7.90	2⅜	⅞				

1 in. Hole; ¼x3/32 in. Keyway

Diametral pitch	Each	Diameter cutter, in.	Diametral pitch	Each	Diameter cutter, in.
4	$16.40	3⅝	16	$7.60	2½
5	14.30	3⅜	18	7.60	2⅜
10	9.00	2¾	20	7.60	2⅜
11	8.60	2⅝	22	6.90	2¼
12	8.60	2⅝	24	6.90	2¼
14	7.60	2½			

1¼ in. Hole; 5/16x⅛ in. Keyway

6	$13.40	3½	9	$10.70	3⅛
7	12.60	3⅜	10	9.80	3
8	11.10	3¼	12	9.40	2⅞

1½ in. Hole; ⅜x5/32 in. Keyway

3	$29.00	5¼	6	$15.70	3⅞
4	20.70	4½	7	13.50	3⅝
5	18.00	4¼	8	12.10	3½

1¾ in. Hole; 7/16x3/16 in. Keyway

2	$52.60	6½	4	$22.20	4¾
2½	47.30	6⅛	5	19.40	4⅜
3	35.50	5⅝	6	16.80	4¼

Eight cutters made for each pitch.

*These sizes made to order only.

Cutters for pitches or sizes not shown are special and made to order.

Specify When Ordering:

Range number
Diameter
Hole size
Pitch
Pressure angle
D & F
Will cutter be used for range or single purpose

Open stock.

CARBOLOY CUTTING TOOLS

(CEMENTED CARBIDE)

Carboloy tools, widely used throughout industry, slash manufacturing costs by increasing production up to ten times, conserve manpower, machines and materials; give better finishes, closer tolerances; are stronger and can take it on the toughest jobs; keep sharper cutting edges longer, resulting in more pieces between grinds.

For Cutting Steel
Grade 78B—General Purpose Machining

A tough, wear-resistant grade for general purpose machining of practically all types of steel. Used to some extent on Monel Metal and Nickel steels. Medium high shock resistant; medium wear resistant. This is the best grade with which to start when the user is not experienced in machining steel with carbides.

For Cutting All Other Materials
Grade 883—General Machining Close Limits

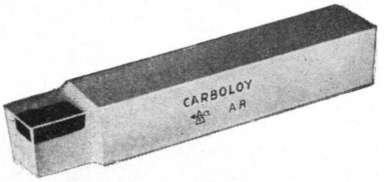
High resistance to wear, combined with toughness, make this a general purpose grade for use on production machining to close limits. Used for roughing and finishing and also for one-cut finishing. Can also be used for light finishing cuts on steel. Not as shock-resistant nor as strong as grade 44A but resists wear better. Medium shock resistant; medium wear-resistant.

Grade 44A—General Purpose Machining

Great toughness, combined with good resistance to wear, makes this a general purpose grade for all types of machining, including interrupted cuts. Tougher, but not as resistant to wear as grade 883. Medium-high shock resistant; medium low wear resistant. This is the best grade with which to start when the user is not experienced in machining with carbides.

A Carboloy Tool Manual covering brazing, grinding, trouble-shooting, and use of Carboloy tools is available on request.

STANDARD CUTTING TOOLS



Type AR—Right Hand

Finish Ground, Ready for Use

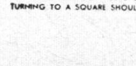
For turning, boring, facing, chamfering and milling. For universal use on all types of machines. Ideal for square shoulder jobs as well as the general run of machining operations on turret lathes, milling machines and boring mills. Sizes to fit Armstrong Williams; Clark and other standard carbide tool holders.

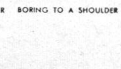
Specifications

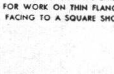
RH Nos.	LH Nos.	Shank, in.	Nose radius, in.	Grades For steel	Grades All other materials	
AR- 4	AL- 4	¼x ¼x1½	1/64	78B	883	....
AR- 5	AL- 5	5/16x 5/16x1½	1/64	78B	883	....
AR- 6	AL- 6	⅜x ⅜x2½	1/64	78B	883	44A
AR- 7	AL- 7	7/16x 7/16x3	1/32	78B	883	....
AR- 8	AL- 8	½x ½x3½	1/32	78B	883	44A
AR-10	AL-10	⅝x ⅝x4	1/32	78B	883	44A
AR-12	AL-12	¾x ¾x4½	1/32	78B	883	44A
AR-16	AL-16	1 x1 x7	1/32	78B	883	44A
AR-20	AL-20	1¼x1¼x8	1/32	78B	883	44A
AR-24	AL-24	1½x1½x8	1/16	78B	...	44A

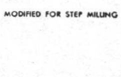
RH Nos.	LH Nos.	Each	Carboloy Blank Nos. RH	Carboloy Blank Nos. LH	No. in a box	Wt. box, lbs.
AR- 4	**AL- 4**	$0.95	2040	2040	12	5/16
AR- 5	**AL- 5**	.95	2070	2070	12	¾
AR- 6	**AL- 6**	1.10	2070	2070	12	1 3/16
AR- 7	**AL- 7**	1.31	2070	2070	12	1 15/16
AR- 8	**AL- 8**	1.55	2170	2170	12	2⅞
AR-10	**AL-10**	1.91	2230	2230	12	5¼
AR-12	**AL-12**	2.26	2310	2310	12	8½
AR-16	**AL-16**	3.65	3390	4390	6	12
AR-20	**AL-20**	5.00	3460	4460	4	14
AR-24	**AL-24**	6.69	3510	4510	2	10

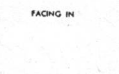
Typical Applications


TURNING
PREFERRED FOR LIGHT CUTS OR TURNING TO A SQUARE SHOULDER

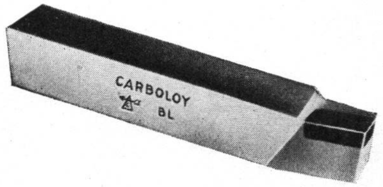

BORING TO A SHOULDER


FACING OUT: PREFERRED FOR WORK ON THIN FLANGES OR FACING TO A SQUARE SHOULDER


MODIFIED FOR STEP MILLING


FACING IN

STANDARD CUTTING TOOLS



Type BL—Left Hand

Finish Ground, Ready for Use

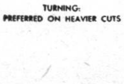
For turning, boring, facing or milling. Permit heavier feeds and depths of cut. With the lead angle design, the chip is thin and total pressure is distributed over a longer length. Sizes to fit all standard carbide tool holders.

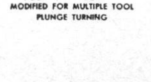
Specifications

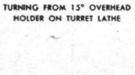
RH Nos.	LH Nos.	Shank, in.	Nose radius, in.	Grades For steel	Grades All other materials	
BR- 6	BL- 6	⅜x ⅜x2½	1/64	78B	883	....
BR- 8	BL- 8	½x ½x3½	1/32	78B	883	44A
BR-10	BL-10	⅝x ⅝x4	1/32	78B	883	44A
BR-12	BL-12	¾x ¾x4½	1/32	78B	883	44A
BR-16	BL-16	1 x1 x7	1/32	78B	883	44A
BR-20	BL-20	1¼x1¼x8	1/32	78B	883	44A
BR-24	BL-24	1½x1½x8	1/16	78B	...	44A
BR-44	BL-44	½x1 x7	1/32	78B	...	....
BR-54	BL-54	⅝x1 x6	1/32	78B	...	....
BR-55	BL-55	⅝x1¼x8	1/32	78B	...	....

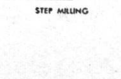
RH Nos.	LH Nos.	Each	Carboloy Blank Nos. RH	Carboloy Blank Nos. LH	No. in a box	Wt. box, lbs.
BR- 6	**BL- 6**	$1.00	1070	1070	12	1 3/16
BR- 8	**BL- 8**	1.56	2170	2170	12	2⅞
BR-10	**BL-10**	1.91	2230	2230	12	5¼
BR-12	**BL-12**	2.26	2310	2310	12	8½
BR-16	**BL-16**	3.65	3390	4390	6	12
BR-20	**BL-20**	5.00	3400	4460	4	14
BR-24	**BL-24**	6.69	3510	4510	2	10
BR-44	**BL-44**	2.20	2260	2260	6	6
BR-54	**BL-54**	2.66	3360	4360	6	6⅜
BR-55	**BL-55**	2.84	3360	4360	6	10

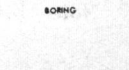
Typical Applications


TURNING:
PREFERRED ON HEAVIER CUTS


MODIFIED FOR MULTIPLE TOOL PLUNGE TURNING


TURNING FROM 15° OVERHEAD HOLDER ON TURRET LATHE

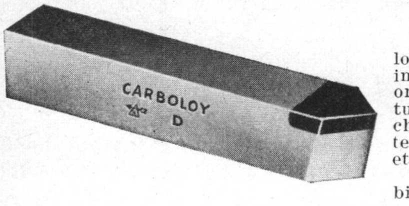

STEP MILLING


BORING

CARBOLOY CUTTING TOOLS

(CEMENTED CARBIDE)

STANDARD CUTTING TOOLS



Finish Ground, Ready for Use

With V-nose, flat top Carboloy tip (0° rake angle) and 80° included angle at nose. Used on on all types of machines for turning, boring, facing and chamfering. Can easily be altered for grooving, recessing, etc.

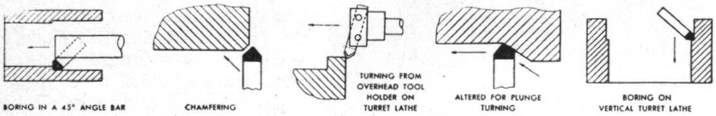
Sizes to fit all standard carbide tool holders.

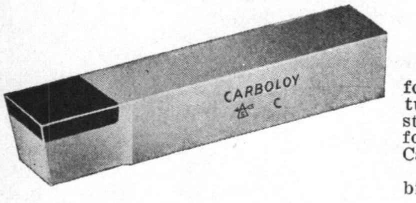
Specifications

Nos.	Shank, in.	Grades For steel	For all other materials	
D-4	¼x ¼x1½	78B	883	...
D-5	5/16x 5/16x2¼	78B	883	...
D-6	⅜x ⅜x2½	78B	883	...
D-7	7/16x 7/16x3	78B	883	44A
D-8	½x ½x3½	78B	883	...
D-10	⅝x ⅝x4	78B	833	44A
D-12	¾x ¾x4½	78B	883	...
D-16	1 x1 x7	78B	883	...

Nos.	Each	Carboloy Blank Nos.	No. in a box	Wt. box, lbs.
D-4	$1.15	5030	12	⅜
D-5	1.15	5080	12	¾
D-6	1.31	5100	12	1¼
D-7	1.60	5105	12	2
D-8	1.65	5200	12	2⅞
D-10	2.26	5240	12	5¼
D-12	2.84	5340	12	8½
D-16	4.29	5410	6	12

Typical Applications


BORING IN A 45° ANGLE BAR
CHAMFERING
TURNING FROM OVERHEAD TOOL HOLDER ON TURRET LATHE
ALTERED FOR PLUNGE TURNING
BORING ON VERTICAL TURRET LATHE



Finish Ground, Ready for Use

Can be readily ground for forming, grooving, facing, turning and chamfering. A sturdy all-purpose cutting tool for general work. Has flat top Carboloy tip (0° rake angle).

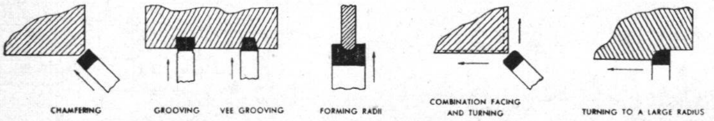
Sizes to fit all standard carbide tool holders.

Specifications

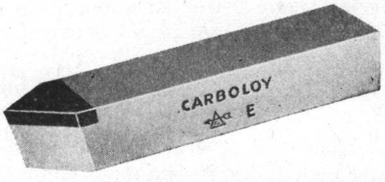
Nos.	Shank, in.	Grades For steel	For all other materials	
C-4	¼x ¼x1½	78B	883	. .
C-5	5/16x 5/16x2¼	78B	883	...
C-6	⅜x ⅜x2½	78B	883	44A
C-7	7/16x 7/16x3	78B	883	...
C-8	½x ½x3½	78B	883	44A
C-10	⅝x ⅝x4	78B	883	44A
C-12	¾x ¾x4½	78B	883	44A
C-16	1 x1 x7	78B	883	44A
C-20	1¼x1¼x8	78B	883	44A
C-44	½x1 x7	78B	883	44A

Nos.	Each	Carboloy Blank Nos.	No. in a box	Wt. box, lbs.
C-4	$1.06	1030	12	⅜
C-5	1.06	1080	12	¾
C-6	1.10	1090	12	1¼
C-7	1.35	1105	12	2
C-8	1.56	1200	12	2⅞
C-10	2.20	1240	12	5¼
C-12	2.84	1340	12	8½
C-16	4.54	1410	6	12
C-20	6.47	1480	4	14
C-44	2.34	1320	6	6⅜

Typical Applications



STANDARD THREADING TOOLS



Finish Ground, Ready for Use

For clean, accurate, single point threading. Its point is designed to conform to the 60° U.S. standard thread and can be quickly ground on the tool tip to meet specifications for flats at the thread roots. Will stand up under rough and finish threading and can be quickly reground.

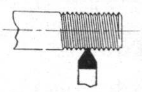
In addition to threading, this versatile tool can be easily adapted for vee-grooving and chamfering work, although best practice is to reserve it for threading only.

Nos.	Each	Shank, in.	Grades For steel	For other materials	Carboloy Blank Nos.	No. in a box	Wt. box, lbs.
E-5	$1.15	5/16x5/16x2¼	78B	883	6080	2	¾
E-6	1.31	⅜x⅜x2½	78B	883	6100	12	1 3/16
E-8	1.65	½x⅜x3½	78B	883	6205	12	2⅞
E-10	2.26	⅝x⅝x4	78B	...	6240	12	5¼
E-12	2.84	¾x¾x4½	78B	...	6340	12	8½

Typical Applications

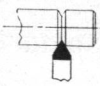
FOR THREADING

The new Style E tool precision cuts U. S. Standard (60°) threads—any needed flat at thread root is obtained by grinding the corresponding flat on tool tip.



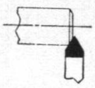
FOR V GROOVING

The same versatile tool, used for V-grooving, requires no alteration unless a flat is required at V-bottom. Fast grinding of tool tip gives the flat specified.



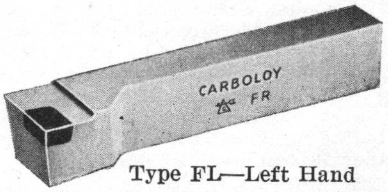
FOR CHAMFERING

Chamfering to almost any desired angle may also be done with the Style E tool. The angle wanted is obtained simply by proper positioning of tool in the lathe compound.



STANDARD OFFSET CUTTING TOOLS

Finish Ground, Ready for Use



Type FL—Left Hand

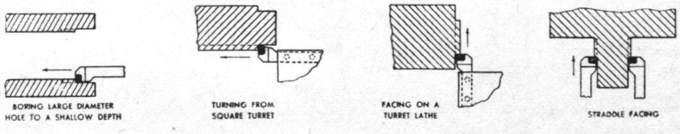
Heavy duty broad-nosed cutting tools that find wide application in turret lathe work. Although used most commonly for facing operations they can be varied for boring or turning in boring mills and vertical turret lathes. Special applications include boring large diameter holes to shallow depths or paired RH and LH cutters for straddle facing. Can also be used for turning from the square turret on turret lathes.

Specifications

R.H. Nos.	L.H. Nos.	Shank, in.	Nose radius, in.	Grades For steel	For all other materials	
FR-12	FL-12	¾x ¾x4½	1/32	78B	...	...
FR-16	FL-16	1 x1 x7	1/32	78B	...	...
FR-20	FL-20	1¼x1¼x8	1/32	78B	883	44A
FR-24	FL-24	1½x1½x8	3/32	78B	...	44A
FR-44	FL-44	½x1 x6	1/32	78B	...	44A
FR-55	FL-55	⅝x ¼x7	1/32	78B	883	44A
FR-64	FL-64	¾x1 x6	1/32	78B	883	44A
FR-85	FL-85	1 x1¼x8	1/32	78B	883	44A
FR-86	FL-86	1 x1½x8	1/32	78B	...	44A
FR-90	FL-90	1½x2 x8	3/32	78B	...	...

R.H. Nos.	L.H. Nos.	Each	Carboloy Blank Nos. R.H.	L.H.	No. in. a box	Wt. box, lbs.
FR-12	**FL-12**	$ 8.18	2310	2310	4	3¼
FR-16	**FL-16**	4.60	4390	3390	4	8½
FR-20	**FL-20**	6.04	4460	3460	4	15
FR-24	**FL-24**	8.20	4510	3510	2	10½
FR-44	**FL-44**	2.96	2260	2260	4	3¾
FR-55	**FL-55**	3.91	4360	3360	4	6⅝
FR-64	**FL-64**	3.60	4380	3380	4	5½
FR-85	**FL-85**	5.70	4460	3460	2	6
FR-86	**FL-86**	7.50	4510	3510	2	5½
FR-90	**FL-90**	14.38	4540	3540	2	11

Typical Applications


BORING LARGE DIAMETER HOLE TO A SHALLOW DEPTH
TURNING FROM SQUARE TURRET
FACING ON A TURRET LATHE
STRADDLE FACING

CARBOLOY CUTTING TOOLS

(CEMENTED CARBIDE)

STANDARD OFFSET CUTTING TOOLS

CARBOLOY
GR

Type GR—Right Hand

Finish Ground, Ready for Use

Ideal for turning and facing close to chuck jaws. On many second operation chucking jobs, wide gripping surfaces are necessary to prevent marring and distortion. This leaves little exposed surface for the finish cut, necessitating working close to chuck jaws. These offset tools make it easy to get in close for finish cuts.

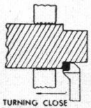
Used on engine lathes, turret lathes and boring mills, as well as vertical turret lathes.

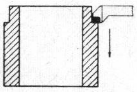
Specifications

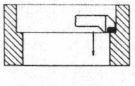
R.H., Nos.	L.H., Nos.	Shank, in.	Nose radius, in.	Grades: For steel	Grades: For all other materials	
GR-12	GL-12	¾x ¾x4½	$\frac{1}{32}$	78B	...	....
GR-16	GL-16	1 x1 x7	$\frac{1}{32}$	78B	...	....
GR-20	GL-20	1¼x1¼x8	$\frac{1}{32}$	78B	883	44A
GR-24	GL-24	1½x1½x8	$\frac{3}{32}$	78B	...	44A
GR-44	GL-44	1½x1 x6	$\frac{1}{32}$	78B	...	44A
GR-55	GL-55	⅝x1¼x7	$\frac{1}{32}$	78B	883	44A
GR-64	GL-64	¾x1 x6	$\frac{1}{32}$	78B	883	44A
GR-85	GL-85	1 x1¼x8	$\frac{1}{32}$	78B	883	44A
GR-86	GL-86	1 x1½x8	$\frac{1}{32}$	78B	...	44A
GR-90	GL-90	1½x2 x8	$\frac{3}{32}$	78B	...	....

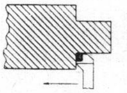
R.H., Nos.	L.H., Nos.	Each	Carboloy Blank Nos. R.H.	Carboloy Blank Nos. L.H.	No. in a box	Wt. box, lbs.
GR-12	**GL-12**	$3.18	2310	2310	4	3¼
GR-16	**GL-16**	4.60	3390	4390	4	8½
GR-20	**GL-20**	6.04	3460	4460	4	15
GR-24	**GL-24**	8.20	3510	4510	2	10½
GR-44	**GL-44**	2.96	2260	2260	4	3¾
GR-55	**GL-55**	3.91	3360	4360	4	6⅝
GR-64	**GL-64**	3.60	3380	4380	4	5½
GR-85	**GL-85**	5.70	3460	4460	2	6
GR-86	**GL-86**	7.50	3510	4510	2	5½
GR-90	**GL-90**	14.38	3540	4540	2	11

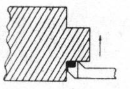
Typical Applications


TURNING CLOSE TO CHUCK JAWS

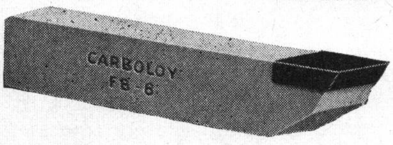

TURNING ON A VERTICAL TURRET LATHE


BORING LARGE DIAMETER ON VERTICAL TURRET LATHE


TURNING TO SHOULDER WIDER THAN LENGTH OF TIP


FACING TO A SHOULDER WIDER THAN LENGTH OF TIP

"FINGER" BITS



Faster, more economical cutting of medium hard formations is insured by using Carboloy "Finger" bits in the conventional finger-bit type of auger drillhead used in many strip mining and underground operations. The improved Carboloy "Finger" bits do a terrific job of gouging out hard-to-take-hold-of overburden.

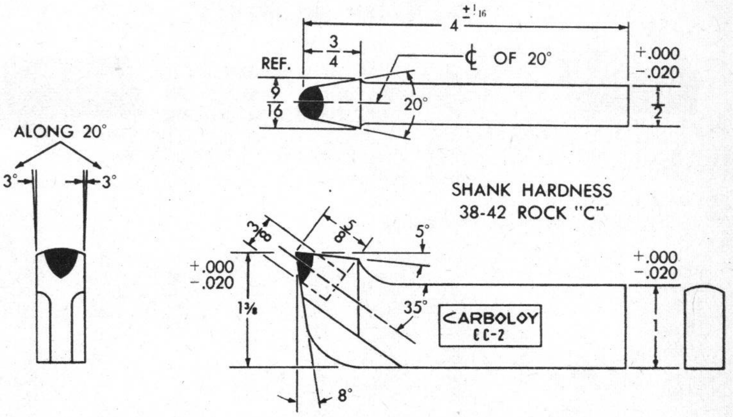
Note the extra secondary clearance which does an extra-special job of reducing tool wear and permitting faster, easier cutting. Now with Carboloy "Finger" bits, you will get the maximum performance for which your drill was designed.

No. FB-8—½ in. square shank, 3 in. long over all; wt. per box 5½ lbs.

Quantity	1–24	25–99	100–499
Each	$1.50	1.35	1.23
Quantity	**500–1999**	**2000–4999**	**5000 and up**
Each	1.15	1.10	1.05

Twenty-five in a box.

COAL CUTTER BITS



For Use on all Cutting Machines

Including "continuous" types employing ½x1 in. bits.

Save both time and money; one Carboloy bit will last 20 times as long as the ordinary steel bit. Carboloy bits will save approximately 7 hours time during their life, based on the average of 20 minutes to reset on a chain.

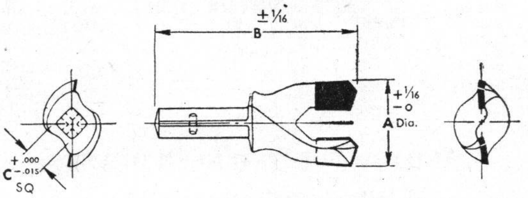
Carboloy bits are so constructed that they: (1) consume less power due to smaller point radius; (2) are easier to resharpen due to less carbide and shank steel; (3) permits free unimpeded flow of coal as shank is level with carbide insert, and (4) may be set to any gauge size within range of use since there are no shoulders.

No. CC-2—4 in. long, 1 in. wide, ½ in. thick; wt. per box 14 lbs.

Quantity	1 to 99	100–499	500–1999	2000–4999	5000 and up
Each	$1.35	1.25	1.15	1.10	1.05

Twenty-five in a box.

AUGER DRILL BITS



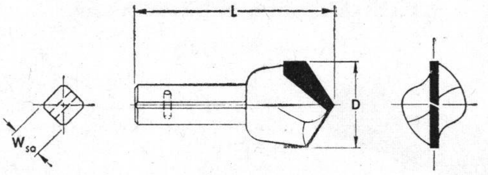
Strong, tough Carboloy Auger Drill Bits really dig in, cut faster and easier, resist wear and last longer. Their cutting ease and rigidity enable them to drill clean, straight holes, shallow or deep, with less work stoppages for drill changes.

Designed for use with all standard drill shafts on post or machine mounted or push-type rotary drills.

Nos.	Each 1-11	Each 12-47	Each 48-199	Each 200-499	"A" Diam., in.	"B" Lgth., in.	"C" Shank, in.	Wt. box, lbs.
AD-28	$6.00	4.70	4.45	4.20	1¾	4$\frac{5}{32}$	.490	2
AD-32	6.40	5.10	4.85	4.60	2	4$\frac{5}{16}$	.490	2¼
AD-36	6.90	5.60	5.35	5.10	2¼	4$\frac{19}{32}$	.615	4

Four in a box.

PIN-TIMBERING DRILLS



Last longer, drill deeper, give greater service under the many extreme pin hole drilling conditions. Less wear, less stalling, fewer drill changes.

Drill clean straight holes. Cutting edges stay sharp longer. Specially designed spiral shank removes cuttings faster. Maximum clearance angles eliminate dragging. Less pressure and less power required.

No. PT-22—4 in. long, 1⅜ in. diam. (D), .490 sq. in. shank (W); wt. per box 1¼ lbs.

Quantity	1–11	12–47	48–199	200–499
Each	$5.50	4.40	4.25	4.05

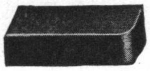
Four in a box.

CARBOLOY CUTTING TOOL BLANKS

(CEMENTED CARBIDE)
STANDARD BLANKS

In Grades 78B, 883 and 44A

Style 1000



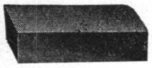
Style 2000 with Radius

For style C, FL, FR, GL and GR cutting tools. Can also be used for general carbide tool, tipping on lathe tools, planer tools and milling cutters.

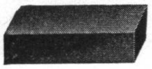
Ideal for wear-resistant application on jigs, fixtures and other tool room and shop work.

Supplied without clearance.

Nos. Style 1000	Nos. Style 2000	Each	Thickness, in.	Width, in.	Lgth., in.	Radius, in.	No. in a box	Wt. box, oz.
1010	....	$0.12	1/16	⅛	⅝	⅛	50	2½
1020	....	.11	1/16	3/16	¼	⅛	50	1½
1060	....	.20	3/32	¼	⅜	⅛	50	4
1070	2070	.23	3/32	¼	½	⅛	50	6
1100	....	.32	3/32	⅜	½	3/16	50	4
....	2170	.40	⅛	5/16	⅜	3/16	25	5½
1200	....	.49	⅛	½	½	¼	25	7
1210	....	.65	⅛	½	¾	¼	25	10
1230	2230	.64	5/32	⅜	¾	3/16	25	9½
....	2290	.72	3/16	⅜	¾	3/16	25	10½
....	2310	.85	3/16	7/16	13/16	¼	10	13
1360	....	.88	¼	⅜	¾	3/16	10	6
1380	....	1.10	¼	½	¾	¼	10	8
1460	....	2.12	5/16	⅝	1	¼	10	15



Style 3000 Right Hand



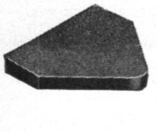
Style 4000 Left Hand

To fit standard cutting tools with clearance on two sides to eliminate unnecessary grinding in your shop. Excellent for special tool application on rush jobs. Ideal for salvage work to extend tool life. Unlimited wear-resistant uses in tool room, machine design and assembly work.

Nos. Style 3000	Nos. Style 4000	Each	Thickness, in.	Width, in.	Lgth., in.	Radius, in.	No. in a box	Wt. box, oz.
3380	4380	$1.10	¼	½	¾	¼	10	8
3390	4390	1.53	¼	9/16	1	¼	10	11½
3410	4410	2.04	¼	¾	1	¼	10	16

STANDARD POINTED NOSE BLANKS

In Grades 78B, 883 and 44A



For tip replacement on Style D Standard cutting tool. Also for making special tool inserts, for chamfering, grooving, etc., and for repairing milling cuts. Adapted to wear-resistant use on jigs and tool room fixtures; also for machinery design and assembly work.

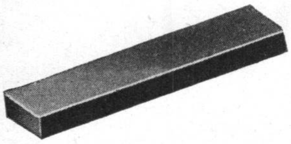
Each

No. 5340—3/16 in. thick., ¾ in. wide, ¾ in. long, 1/32 in. radius; wt. per box 6 oz. $1.20

Twenty-five in a box.

STANDARD SCRAPER BLANKS

Grade 883 Only



In addition to high effectiveness as Scraper blades, these handy blanks are finding new and useful application in fine finishing reamers, slab mills and end mills. Retain sharp cutting edges longer and give high quality finish.

Nos.	Each	Thickness, in.	Width, in.	Lgth., in.	No in a box	Wt. box, oz.
ST-1	$0.14	3/64	3/32	1	50	3
ST-2	.33	1/16	¼	1	25	4½
ST-3	.41	3/32	¼	1	25	6
ST-4	.58	⅛	¼	1¼	25	10

Note—In ordering blanks, please specify grade wanted.

CARBIDE TURNING TOOL HOLDERS

WILLIAMS

WILLIAMS
CARBIDE TURNING TOOL HOLDER

Straight Shank

For Square Cutters

Holders are broached for square carbide cutters, but are supplied without cutters.

WILLIAMS
CARBIDE TURNING TOOL HOLDER

Right Hand Offset

WILLIAMS
CARBIDE TURNING TOOL HOLDER

Left Hand Offset

In these tools, the cutter is held parallel to the shank. Consequently, cutters can be so ground as to provide maximum support for the cutting edge. This feature, plus the extremely rigid holder is the recognized basis for the best performance of cemented carbide cutters.

Complete with wrench.

Straight Shank Nos.	Offset Right hand Nos.	Shank Left hand Nos.	With High Without cutter, each	Size holder, in.	Cutter For cutter size square, in.	Wt. each, lbs.
T-0-S	T-0-R	T-0-L	$ 7.57	⅜x 15/16x 6	¼	.71
T-1-S	T-1-R	T-1-L	8.54	½x1¼x 7	5/16	1.5
T-2-S	T-2-R	T-2-L	10.69	⅝x1½x 8	⅜	2.4
T-3-S	T-3-R	T-3-L	14.26	¾x1¾x 9	7/16	3.5
T-4-S	T-4-R	T-4-L	18.04	⅞x1⅞x10	½	4.9
T-5-S	T-5-R	T-5-L	25.70	1 x2⅛x12	⅝	8

One in a box.

TURNING TOOL HOLDERS

WILLIAMS

WILLIAMS
TURNING TOOL HOLDER

Straight Shank

For Square Cutters

Complete with wrench and one high speed cutter unless otherwise ordered.

WILLIAMS
TURNING TOOL HOLDER

Right Hand Offset

Left Hand Offset

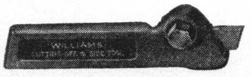
These rugged holders are drop-forged from strong, tough steel, specially heat-treated and hardened. Cutter channel is unusually long and accurately broached, providing and absolutely true and rigid seat for the cutter. No "chattering" under heavy cuts—no breaking of costly high-speed steel cutters.

Straight Shank Nos.	Offset Right hand Nos.	Shank Left hand Nos.	With High Speed Cutter	High Speed Cutters Only	Size holder, in.	Cutter size, sq., in.	Wt. each, lbs.
0-S	0-R	0-L	$ 6.75	$0.29	⅜x ⅞x 5	¼	.63
1-S	1-R	1-L	7.72	.48	½x1⅛x 6	5/16	1.2
2-S	2-R	2-L	9.50	.77	⅝x1⅜x 7	⅜	2
3-S	3-R	3-L	12.85	1.25	¾x1⅝x 8	7/16	3.2
4-S	4-R	4-L	16.35	1.83	⅞x1¾x 9	½	4.5
5-S	5-R	5-L	23.17	3.30	1 x2 x11	⅝	7.1
6-S	6-R	6-L	32.08	4.39	1¼x2¼x13	¾	12

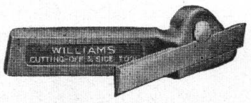
One in a box.

CUTTING-OFF SIDE-TOOL HOLDERS

WILLIAMS



Nos. 19 to 25



Nos. 29-R to 35-R

WILLIAMS
CUTTING-OFF & SIDE TOOL

Nos. 29-L to 35-L

One holder takes both cutting-off and side blades, providing unique convenience and economy.

The cam fastening is always **rapid and** positive—the greater the pressure the tighter the lock.

The cutter blades are high speed steel hardened and ground on both ends ready for use. By reversing the **blade end for** end it can be used in either left or right hand offset shanks.

The cut-off blades are interchangeable in other standard holders. Furnished with cutters and wrench unless otherwise ordered.

Specifications

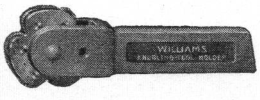
Nos.	Holder size, in.	Cutting-off blade, in.	Side blade, in.	Wt. each, lbs.
19 or 29	5/16x 13/16	3/32x ½	⅛x ½	.49
20 or 30	⅜x 31/32	3/32x ⅝	5/32x ⅝	.75
21 or 31	½x1 3/16	⅛x ¾	3/16x ¾	1.4
22 or 32	⅝x1⅜	⅛x ⅞	¼x ⅞	2.2
23 or 33	¾x1⅝	3/16x1	5/16x1	3.5
24 or 34	⅞x1¾	3/16x1⅛	⅜x1⅛	4.9
25 or 35	⅞x1¾	¼x1⅛	......	5.2

Straight shank, Nos.	Offset shank, RH Nos.	Offset shank, LH Nos.	Cut-off holder complete, each	Side holder complete, each	Cut-off blade only, each	Side blade only, each
19	**29-R**	**29-L**	$6.75	$6.75	$1.41	$1.41
20	**30-R**	**30-L**	7.13	8.10	1.56	2.16
21	**31-R**	**31-L**	8.54	10.41	2.16	3.34
22	**32-R**	**32-L**	10.69	14.26	3.12	5.50
23	**33-R**	**33-L**	14.26	18.63	5.13	8.00
24	**34-R**	**34-L**	17.82	25.52	6.91	11.88
25	**35-R**	**35-L**	20.42	.....	9.50	.....

One in a box.

KNURLING-TOOL HOLDERS

WILLIAMS



With Revolving Head

Carries three pairs of knurls for fine, medium and coarse work. These are fitted in a revolving head and can be used as desired without loss of time in changing knurls.

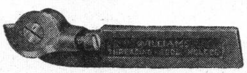
Knurls and pins are tool steel, carefully tempered.

Nos.	Complete, each	Knurls, per pair	Holder size, in.	Diam. knurl, in.	Face of knurl, in.	Wt. each, lbs.
3-K-0	$19.01	$2.16	⅜x ⅞x5½	⅝	3/16	1
3-K-1	21.38	2.50	½x1⅛x6⅝	¾	¼	1.8
3-K-2	24.95	2.50	⅝x1⅜x6⅝	¾	¼	2.2

One in a box.

THREADING-TOOL HOLDERS

WILLIAMS



Formed Cutter Pattern

Assure threads that fit perfectly, since in re-sharpening the cutter, it is necessary to grind its top edge only. The point will always **retain proper** form and angle.

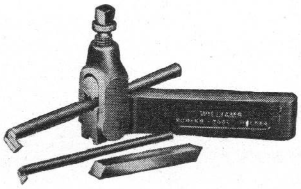
The high speed cutter is ground to an included angle of 60° and is backed off for proper clearance. Hardened stop screw. Furnished with high speed steel cutter and wrench unless otherwise ordered.

Nos.	Complete, each	Extra cutter, each	Holder size, in.	Cutter	Wt. each, lbs.
50	$ 9.88	$6.31	⅜x ⅞x5	Formed	.8
51	11.88	7.44	½x1⅛x5¾	Formed	1.3
52	15.22	9.88	⅝x1⅜x7	Formed	2.3

One in a box.

BORING TOOL HOLDERS

WILLIAMS LIGHT



For Many Sizes of Bars

Very handy and economical for tool room use and for all small work. Not only in boring small diameter, threading, etc., but also in turning.

Each tool will hold a number of sizes of bars.

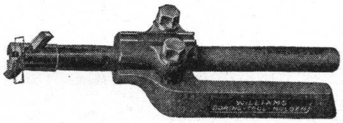
Complete with two high speed steel bars and one high speed steel square cutter with ends beveled to a "diamond" **point.**

Nos.	Complete, each	Square cutter, each	Holder size shank, in.	With each holder 2 bars diam., in.	With each holder 1 square cutter, in.	Wt. each, lbs.
15	$ 9.88	$0.29	⅜x ¾x5	⅛–¼	¼	.88
16	12.47	.48	½x1 x5¾	3/16–5/16	5/16	1.6
17	16.04	.77	⅝x1¼x6¾	¼–⅜	⅜	2.8
18	20.57	1.25	¾x1½x7½	5/16–7/16	7/16	4.6

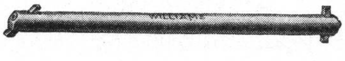
Extra Boring Bars

Size, in.	⅛x4	3/16x4½	¼x5	5/16x6	⅜x7	7/16x8
For holders, Nos.	15 & 16	15 to 17	15 to 17	15 to 18	16 to 18	17 & 18
Each	$0.82	1.08	1.36	1.62	2.16	2.98

WILLIAMS



Sleeve Bar



Plain Bar

Holds Many Sizes of Bars

Each holder takes many sizes of bars without requiring bushings or sleeves.

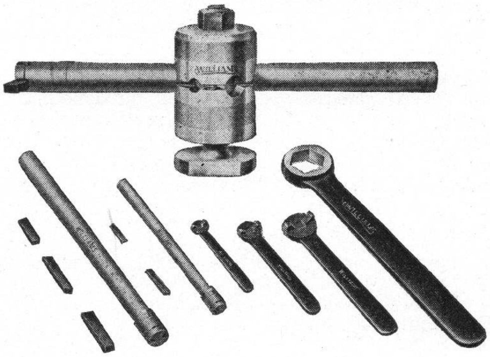
Sleeve bar fastening provides for rapid adjustment of **either straight or angular cutters without the use of extra parts.**

Plain bar takes straight or angular cutters, held by headless set screws.

Nos.	With Plain Bar, each	With Sleeve Bar, each	Holder size, in.	Capacity for bars, in.	Standard bar diam., in.	Wt. each, lbs.
00B	$10.21	$11.66	5/16x ¾	3/16 to ½	½	1.2
8	10.21	11.66	⅜x ⅞	¼ to ⅝	⅝	2.0
9	11.88	13.82	½x1⅛	¼ to ¾	¾	3.8
10	15.44	18.19	⅝x1⅜	⅜ to 15/16	15/16	6.6
11	22.81	25.76	¾x1⅝	½ to 1⅛	1⅛	11.0
12	34.45	38.02	⅞x1¾	1 5/16	1 5/16	16.0

BORING TOOLS

WILLIAMS 3-BAR



Each set consists of one holder, three boring bars each with one 45° and one 90° high speed cutter and wrench, and one wrench for holder nut.

Changes made speedily. **Strongest** bar possible can be used for each individual job.

Nos.	Each	For lathes swing, in.	Diam. of bars, in.	Length bars, in.	Size cutter square, in.	Wt. each, lbs.
0-BB	$ 33.26	8 to 10	⅜, ½, ¾	7, 7⅝, 11	*, 3/16, ¼	5¼
1-B	53.46	12 to 16	½, ¾, 1⅛	7⅝, 11, 16	3/16, ¼, ⅜	18
2-B	71.28	16 to 18	⅝, 15/16, 1 5/16	9⅛, 13¼, 19	3/16, 5/16, ⅜	28
3-B	124.74	20 to 22	¾, 1⅛, 1½	11, 16, 23¼	¼, ⅜, 7/16	45
4-B	178.20	24 to 32	15/16, 1 5/16, 1 13/16	13¼, 19, 27¼	5/16, ⅜, ½	68

*⅜ in. Solid Bar.

All above, one in a box.

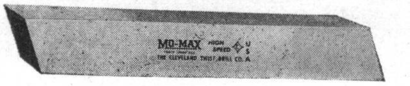
GROUND TOOL BITS AND CUT-OFF BLADES

MO-MAX

High Speed Steel

Finish ground on the sides after hardening, enabling a great saving of time and no production interruptions for preparing tools. Actually these bits are finished tools such as drills, taps, etc.

They are specially packed for convenient handling, rust prevention and quick identification of sizes.



No. 850—Square Tool Bits, High Speed Steel

No. 855—Square Tool Bits, Cobalt High Speed Steel

Both ends beveled 20°

Use No. 850 for all general machine work. For the toughest cutting jobs use No. 855 cobalt; if this won't handle the job use carboloy.

Size square, in.	Each	Length over all, in.	Pieces in package	Wt. package, lbs.
3/16	$ 0.50	2½	12	5/16
¼	.65	2½	12	9/16
5/16	.90	2½	12	⅞
⅜	1.25	3	12	1 7/16
7/16	1.65	3½	6	1 3/16
½	2.20	4	6	1¾
⅝	3.40	4½	2	1
¾	5.20	5	2	1 9/16
⅞	8.90	6	2	2 9/16
1	14.15	7	1	2

Note—Nos. 850 and 855 carry different discounts from above list prices. No. 850 selling price is approximately 15% less than No. 855.

MO-MAX
HIGH SPEED
U S A
THE CLEVELAND TWIST DRILL CO.

No. 853—Flat Cut-Off Blade, High Speed Steel

For Williams tool holders; also fit Armstrong.

Nominal size, in. Thickness		Width	Each	Length over all, in.	Wt. each, oz.
3/32	x	½	$2.85	4½	¾
⅛	x	⅞	4.90	6	2
3/16	x	1	4.60	6½	4¾
¼	x	1¼	6.75	7	8

One in a package.

LATHE DOGS

WILLIAMS "VULCAN" DROP-FORGED

Bent Tail; with Safety Headless Screw

Safety for the operator, better balance when on the lathe and interchangeable screws are material improvements in design.

The screws are of special steel, hardened and tempered, and are threaded U. S. Standard, except that those above 1 inch diameter have eight threads per inch.

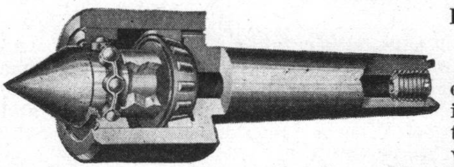
Unless otherwise specified wrench will be supplied with each Dog at price shown below.

Nos.	Each	Wrench, each	Cap., in.	Size screw, in. Diam.	Size screw, in. Length	Wt. each, lbs.
2	$ 1.87	$0.24	½	9/16	13/16	.56
3	2.02	.26	¾	⅝	1 1/16	1.0
4	2.38	.26	1	⅝	1¼	1.5
5	2.88	.33	1¼	¾	1⅜	1.9
6	3.39	.40	1½	⅞	1 11/16	2.6
7	4.07	.40	1¾	⅞	1 11/16	3.3
8	4.75	.51	2	1	1⅞	4.1
9	6.09	.64	2½	1⅛	2	5.4
10	7.79	.81	3	1¼	2⅛	7.0
11	10.16	1.01	3½	1⅜	2½	10.0
12	15.25	1.25	4	1½	2⅝	12.0

Open stock.

LIVE LATHE CENTERS

IDEAL



Ball and Tapered Roller Bearing

Increases lathe production because there is no friction between the live center and the work. "Hogging Cuts" can be made at high speeds. Saves time in centering work. Simplifies setup. Eliminates burning of work or center because there is no friction at the point of support.

Bearing seal keeps lubricant in and keeps out cutting oil, dirt and chips. All parts hardened and ground.

Only one center is needed to handle a wide variety of work. You merely change inserts.

1—Pipe insert; for pipe, tubing and hollow shafts up to 3 in. ID.
2—Female insert with 3 raised lands; for uncentered work having flat or burred keyway.
3—Plain female insert; for uncentered work such as tubing, shafts, tools, etc.
4—Male insert; for work already centered.

With Male Insert

Nos.	Each	Morse taper, Nos.	Length shank, in.	Length head, in.	Diam. head, in.	Wt. each, lbs.
3MB	**$46.20**	3	3 9/16	2 1/16	1 15/16	2½
4MC	**64.25**	4	4 7/16	2⅝	2 9/16	6½

Pipe Inserts

For ½ to 3 in. pipe.

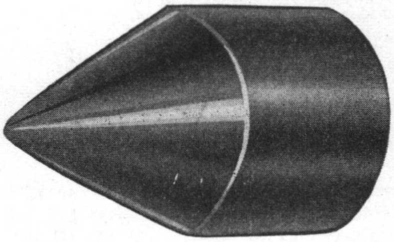
Nos.	**K-993-3**	**K-1024-1**
For center, Nos.	3MB	4MC
Each	**$20.75**	**22.25**

Female Inserts

Plain Nos.	Plain Each	With Lands Nos.	With Lands Each	For center, Nos.	Size, in.
K-1057-2	**$6.50**	**K-1060-2**	**$13.05**	3MB	⅜ to 1
K-1058-2	**7.90**	**K-1061-2**	**15.70**	4MC	⅝ to 1¼

LATHE CENTERS

CARBOLOY



Grade 44A

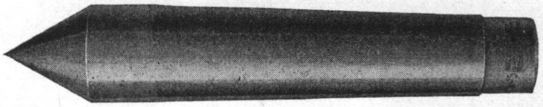
Ideal for use in lathes, turret lathes, and grinders. Also used as a flaring tool.

Especially ideal for jobs requiring precision centering. Will maintain the highest degree of accuracy without pronounced wear long after steel centers have gone by the wayside.

Morse Taper

Taper, Nos.	Each	Length over all, in.	Carboloy tip, in. Diam.	Carboloy tip, in. Length	Wt. each, lbs.
1	$ 4.15	3⅛	¼	⅜	¼
2	4.76	3¾	5/16	7/16	½
3	8.89	4⅝	7/16	⅝	1
4	13.64	5¾	½	¾	2⅛
5	21.99	7¼	⅝	⅞	5

HIGH SPEED STEEL



Hardened high speed steel points; accurately and smoothly ground all over. 60° included angle. Straight section behind point permits regrinding when worn or chipped. Will not burn.

No. 390—Morse Taper Shanks

Taper shank, Nos.	Each	Length over all, in.	Length body, in.	Depth shank, in.	Wt. each, lbs.
0	$1.50	3 3/32	¾	2 7/32	⅛
1	1.75	3⅝	1	2 7/16	3/16
2	2.50	4 9/16	1 7/16	2 15/16	7/16
3	3.25	5¾	1⅞	3 11/16	15/16
4	4.75	7 5/16	2 7/16	4¾	2
5	9.25	9 3/16	3 1/16	5⅞	4¾

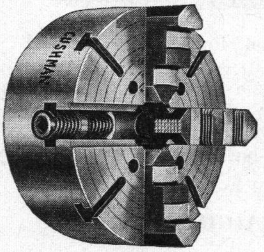
All above, one in a box.

LATHE CHUCKS

CUSHMAN

Recommended Medium Duty Types for Engine, Tool Room and Manufacturing Lathes. For Mounting on Threaded Spindle Noses with Intermediate Plates. All parts are heat-treated alloy steels. A T-plug type heat-treated nickel steel wrench is provided with each chuck.

4-JAW INDEPENDENT CHUCKS



Solid One Piece Jaws, Reversible

Steel chucks 12 to 24 in. have T-slots.

Semi-steel chucks 4½ to 12 in. have plain faces; 15 to 21 in. have bolt openings.

Semi-Steel Body

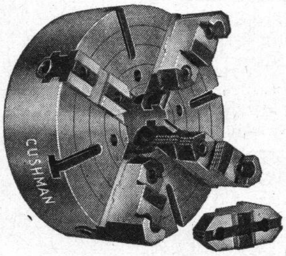
Nos.	Each	Size, in.	Appr. wt. each, lbs.
414-C	$ 82.00	4½	15
614-C	96.00	6	20
814-C	112.00	8	46
1014-C	142.00	10	75
1214-C	168.00	12	95
1514-C	202.00	15	150
1814-C	280.00	18	282
2114-C	352.00	21	350

Forged Steel Body

Nos.	Each	Size, in.	Appr. wt. each, lbs.
8214-C	$184.00	8	46
10214-C	216.00	10	75
12214-C	274.00	12	95
15214-C	336.00	15	150
18214-C	424.00	18	282
21214-C	516.00	21	350
24214-C	612.00	24	420

One in a box.

4-JAW INDEPENDENT CHUCKS



Two Piece Jaws, Tops Reversible

Jaws are tongue and groove type.

Steel chucks 12 to 24 in. have T-slots.

Semi-steel chucks to 12 in. have plain faces; 15 to 21 in. have bolt openings.

Semi-Steel Body

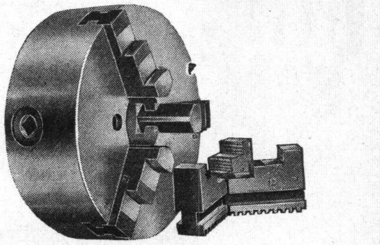
Nos.	Each	Size, in.	Appr. wt. each, lbs.
10146-C	$250.00	10	75
12146-C	276.00	12	94
15146-C	336.00	15	148
18146-C	496.00	18	280
21146-C	562.00	21	345

Forged Steel Body

Nos.	Each	Size, in.	Appr. wt. each, lbs.
102146-C	$324.00	10	75
122146-C	382.00	12	94
152146-C	472.00	15	148
182146-C	640.00	18	280
212146-C	732.00	21	345
242146-C	828.00	24	415

One in a box.

3-JAW GEARED SCROLL TYPE SELF-CENTERING CHUCKS



Solid One Piece Jaws

With one set each of No. 1 (external) and No. 2 internal) jaws.

Jaw end-bites of No. 1 jaws in all sizes are smooth. 3, 4 and 5 chucks have smooth bites on steps; all larger sizes have serrated step-bites.

Jaw end-bites of No. 2 jaws are smooth. 3 to 10 in. chucks have smooth step-bites; larger sizes have serrated step-bites.

Semi-Steel Body

Nos.	Each	Size, in.	Appr. wt. each, lbs.
834-C	$154.00	8	44
1034-B	184.00	10	74
1234-B	226.00	12	118
1534-B	322.00	15	172

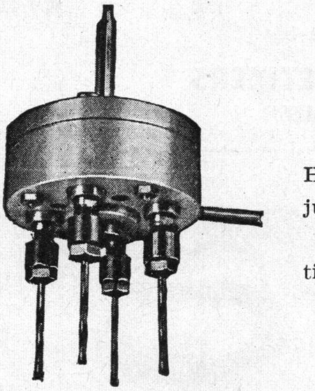
Forged Steel Body

Nos.	Each	Size, in.	Appr. wt. each, lbs.
3234-B	$ 88.00	3	3
4234-B	100.00	4	8
5234-B	108.00	5	12
6234-B	124.00	6	22
8234-C	216.00	8	44
10234-B	270.00	10	76
12234-B	336.00	12	120
15234-B	448.00	15	180

One in a box.

MULTIPLE SPINDLE DRILL HEADS

ERRINGTON



Errington manufactures Drill Heads in both fixed-center and adjustable types.

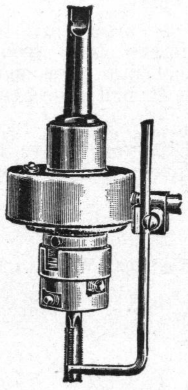
Illustration shows a super-sensitive fixed-center head.

Submit full details of your work to enable us to select the proper head for your application.

Prices on Request

TAPPING CHUCKS

ERRINGTON AUTOMATIC-REVERSE



Direct Clutch Drive and Reverse

Errington Tapping Chucks are made in many different sizes and types, including multiple spindle types.

Specifications on the Style C Chuck illustrated, with friction clutch, are shown in the table below.

Write for prices and sizes on other types.

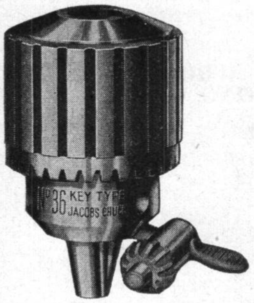
The first size of Morse Taper Shank shown for each size chuck is the one regularly furnished. The other size can be furnished but the size marked (*) is too small unless reinforced by a set screw.

Size, Nos.	Taps, in.		Morse Taper Shank, Nos.	Morse or Jacobs Shank Code
	Exact size	Pipe size		
00H.S.	Up to ¼	...	Jacobs socket	No. 2 Sap
00	⅛ to 5/16	...	Jacobs socket	No. 33 Sly
0	3/16 to ½	¼	Jacobs 3, 2, (1*)	No. 1 Snod
1	¼ to ¾	½	Jacobs 3, 4, (2*)	No. 2 Sog
2	⅜ to 1	½	Jacobs 4, (3*)	No. 3 Slate
3	⅝ to 1¼	1	Jacobs 4, (3*)	No. 4 Smoth
4	¾ to 1½	1	Jacobs 5, 4	No. 5 Scan
5	¾ to 2	2	Jacobs 5, (4*)	No. 6 Seam

Prices on Request

DRILL CHUCKS

JACOBS IMPROVED PLAIN BEARING



For Portable Tools

Recommended for use on portable drills, drill presses, bench grinders and tapping devices where its combination of simplicity, ruggedness and gripping power for sensitive, high speed or any other form of light precision drilling is unsurpassed.

Easy-grip sleeve, ground inside and out. Nickel molybdenum alloy steel jaws, heat treated. Hardened and ground body with diamond bore taper hole.

Light Duty Key Type, Plain Bearing

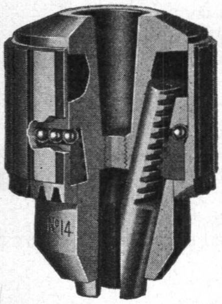
Tapered Hole Chucks, Model Nos.	Series No. taper hole	Threaded Hole Chucks, Model Nos.	Hole dimensions	Each	Capacity, in.	Key Nos.	Wt. each, lbs.
1A	1	**1B**	⅜x24	$5.50	0–¼	1	¼
2A	2	...	.....	6.50	0–⅜	2	1
33	33	**33B**	½x20 ⅝x16	7.50	5/64–½	32	1
6A-33	33	....	.....	8.00	0–½	3	1¼

Medium Duty Key Type, Plain Bearing

Tapered Hole Chucks, Model Nos.	Series No. taper hole	Threaded Hole Chucks, Model Nos.	Hole dimensions	Each	Capacity, in.	Key Nos.	Wt. each, lbs.
7	2	**7B**	⅜x24 ½x20	5.50	0–¼	7	½
30	2	**30B**	⅜x24 ½x20	6.00	0–5/16	30	½
32	2	**32B**	½x20 ⅝x16	6.50	0–⅜	32	1
34	6	**34B**	⅝x16	8.00	0–½	3	1¾
3A	3	**3B**	⅝x16	9.50	⅛–⅝	3	2
36	3	**36B**	⅝x16 ¾x16	12.00	3/16–¾	4	2¾

One in a box.

JACOBS MODEL N SUPER BALL BEARING



Key Type, for Tapered Arbors and Spindles

The recently improved inserted ball thrust race and continuous deep groove, chrome nickel alloy steel nut have made this chuck the universal favorite for heavy duty drilling.

Highly recommended if you desire the utmost from your drill press, lathe or hand screw machine.

Nos.	Each	Cap., in.	Series No. taper hole	Key Nos.	Wt. each, lbs.
14N	$11.00	0–½	3	3	2 1/16
18N	17.50	⅛–¾	4	4	4⅛

One in a box.

JACOB CHUCK KEYS

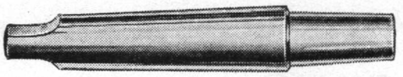
Key	Each	Fits chuck, Nos.
1	$0.35	1A, 1B
2	.50	2A
3	.55	3A, 3B, 6A-33, 34, 34B, 14N
4	.80	36, 36B, 18, 18N
7	.40	7, 7B
30	.45	30, 30B
32	.50	32, 32B, 33, 33B

Open stock.

DRILL CHUCK ARBORS

Note—When ordering arbors, give **taper number** and **number of chuck** for which arbor is intended.

JACOBS TAPER SHANK



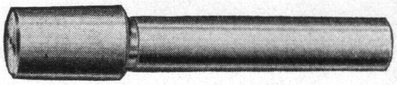
Solid Steel, Polished

Have a hole for mounting directly on machine spindle, or to arbors or adapters which in turn fit the machine spindle.

Morse Taper Nos.	0	1	2	3	4	5
Wt. each, lbs.	3/16	3/16	½	1 1/16	2	4 1/16
Each	$1.00	1.00	1.00	1.50	2.40	4.50

One in a box.

JACOBS STRAIGHT SHANK



Solid Steel, Polished

Size, in.	½	⅝
Wt. each, lb.	¼	⅜
Each	$1.00	1.00

One in a box.

MAGNETIC CHUCKS

WALKER PERMANENT

Speed Up Production

Eliminate expensive jigs and fixtures; promote greater accuracy as work is held firmly. No electricity is required, eliminating electrical connections and wires. No installation or maintenance costs.

Easily transferred from one machine to another without use of additional equipment or wiring.

Energized by the latest method retaining their superior holding power indefinitely. They have 12% more effective magnetic area than any other permanent magnetic chuck.

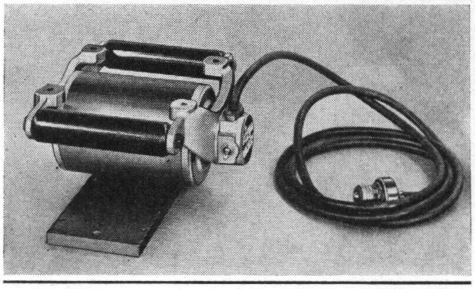
Electric Magnetic chucks can also be furnished.

Nos.	Each	Work surface, in.	Magnetic surface, in.	Base, in.	Height, in.	Pole, in.	Ship. wt. each, lbs.
408	$ 83.00	4⅛x 8	2⅞x 6½	4⅛x10½	2⅞	⅜	51
510	118.00	5 x10	3¾x 8 7/16	5 x13⅞	4 3/32	7/16	75
618	165.00	6¼x18	4 11/16x16⅛	6¼x22 5/16	4¼	19/32	152
824	282.00	8 x24	5⅞x21½	8 x28 5/16	4¾	⅝	290
9-R	200.00	9 diam.	7½ diam.	9 diam.	4⅝	..	90
			Swivel Models				
408-S	147.00	4¼x 8	2⅞x 6½	3 x16 13/16	4 23/32	⅜	65
618-S	294.00	6¼x18	4 11/16x16⅛	5½x23¾	6¾	19/32	238
824-S	528.00	8 x24	5⅞x21½	8 x30 9/16	8 7/16	⅝	419

One in a box.

DEMAGNETIZERS

WALKER



Portable Type for Alternating Current

For 110-220 volt, single phase, 60 cycle.

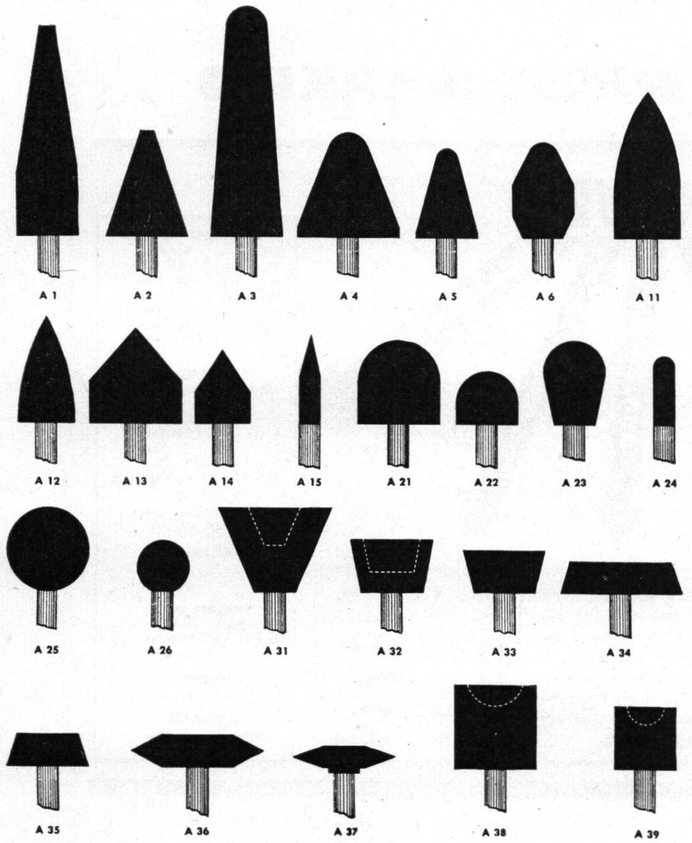
The plain type is for all ordinary purpose, while the pistol grip type is for use on heavier work.

	Each
Plain—Shipping wt. each 25 lbs.	$82.00
Pistol Grip—Shipping wt. each 25 lbs.	96.00

One in a box.

MOUNTED GRINDING WHEELS AND POINTS

NORTON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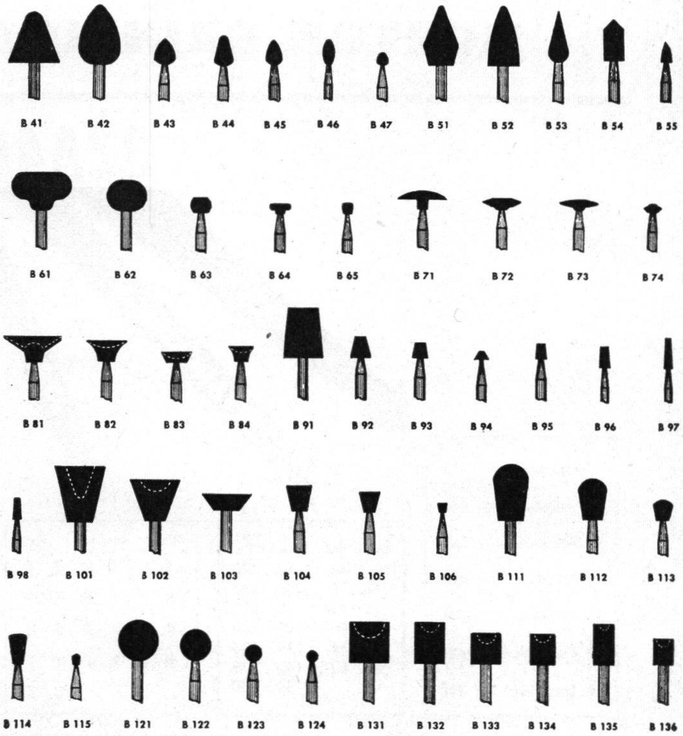
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B 124
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B 133
B 134
B 135
B 136

GROUP A—SPECIAL SHAPES

Shape, Nos.	Vitrified, each	Resinoid, each	Size, in. Diameter	Size, in. Thickness
A1	$1.90	$2.80	3/4	2 1/2
A2	1.15	2.00	1	1 1/4
A3	2.05	3.00	7/8	2 3/4
A4	1.30	2.15	1 1/4	1 1/4
A5	1.10	1.95	3/4	1 1/8
A6	1.10	1.95	3/4	1 1/8
A11	1.40	2.25	13/16	1 3/4
A12	1.10	1.95	11/16	1 1/4
A13	1.30	2.15	1 1/8	1 1/8
A14	.85	1.70	11/16	7/8
A15	1.05	1.90	1/4	1 1/16
A21	.90	1.75	1	1
A22	.80	1.55	3/4	5/8
A23	.85	1.70	3/4	1
A24	.75	1.50	1/4	3/4
A25	.90	1.75	1	1
A26	.80	1.55	5/8	5/8
A31	1.10	2.00	1 3/8	1
A32	.85	1.60	1	5/8
A33	.80	1.50	1	1/2
A34	.95	1.65	1 1/2	3/8
A35	.80	1.40	1	3/8
A36	1.10	1.85	1 5/8	3/8
A37	.85	1.45	1 1/4	1/4
A38	.75	1.50	1	1
A39	.65	1.30	3/4	3/4

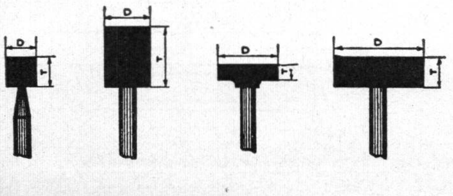
Note—Nos. A38 and A39 priced as plain shapes.

GROUP B—SPECIAL SHAPES

Shape, Nos.	Vitrified, each	Resinoid, each	Size, in. Diameter	Size, in. Thickness
B41	$0.80	$1.55	5/8	5/8
B42	.75	1.50	1/2	3/4
B43	.70	1.30	1/4	5/16
B44	.70	1.30	7/32	3/8
B45	.70	1.30	3/16	5/16
B46	.70	1.30	1/8	5/16
B47	.65	1.25	1/8	5/32
B51	.75	1.50	7/16	3/4
B52	.75	1.50	3/8	3/4
B53	.75	1.50	1/4	5/8
B54	.70	1.40	1/4	1/2
B55	.65	1.25	1/8	1/4
B61	.75	1.35	3/4	5/16
B62	.70	1.30	1/2	3/8
B63	.65	1.25	1/4	3/16
B64	.65	1.25	1/4	1/16
B65	.65	1.25	1/8	1/8
B71	.70	1.30	5/8	3/32
B72	.65	1.25	1/2	3/32
B73	.65	1.25	1/2	3/32
B74	.65	1.25	7/32	3/32
B81	.70	1.30	3/4	3/16
B82	.65	1.25	1/2	1/4
B83	.65	1.25	3/8	1/8
B84	.65	1.25	5/16	3/16
B91	.75	1.50	1/2	5/8
B92	.65	1.25	1/4	1/4
B93	.65	1.25	3/16	3/16
B94	.65	1.25	11/64	3/32
B95	$0.65	$1.25	1/8	3/16
B96	.65	1.25	1/8	1/4
B97	.70	1.30	3/32	3/8
B98	.65	1.25	3/32	1/4
B101	.80	1.55	5/8	11/16
B102	.75	1.45	5/8	1/2
B103	.70	1.30	5/8	3/16
B104	.70	1.30	5/16	3/8
B105	.65	1.25	1/4	1/4
B106	.65	1.25	1/8	7/64
B111	.75	1.50	7/16	11/16
B112	.70	1.40	3/8	1/2
B113	.65	1.25	1/4	1/4
B114	.70	1.30	7/32	3/8
B115	.65	1.25	3/32	1/8
B121	.70	1.40	1/2	1/2
B122	.70	1.30	3/8	3/8
B123	.65	1.25	3/16	3/16
B124	.65	1.25	1/8	1/8
B131	.55	1.15	1/2	1/2
B132	.55	1.15	3/8	1/2
B133	.55	1.05	3/8	3/8
B134	.55	1.05	5/16	3/8
B135	.55	1.15	1/4	1/2
B136	.55	1.05	1/4	5/16

Note—Nos. B131 to B136 inclusive priced at plain shapes.

GROUP W—PLAIN SHAPES

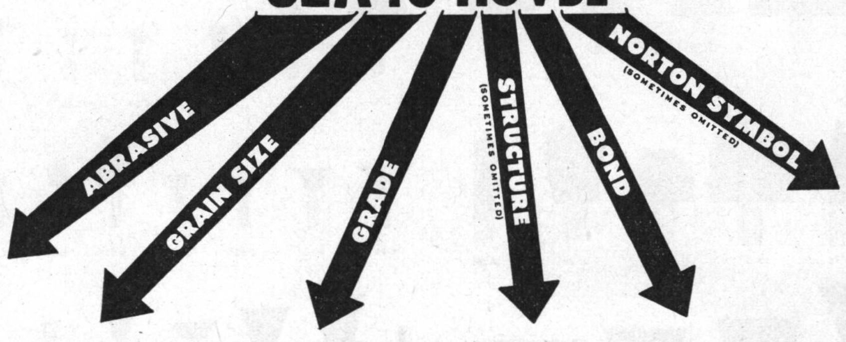


Standard Specifications of mounted points and mounted wheels carried in stock are: Grits 38A60, 38A90 and 38A120, grades M and O, alundum vitrified.
Grits 37C60, 37C80 and 37C100, grades M and O, crystolon, vitrified.
Spindle size must be specified.

Write for Complete Catalog

THIS IS A TYPICAL NORTON GRINDING WHEEL MARKING

32A46-H8VBE


ABRASIVE
GRAIN SIZE
GRADE
STRUCTURE
(SOMETIMES OMITTED)
BOND
NORTON SYMBOL
(SOMETIMES OMITTED)

Alundum = A
19 Alundum = 19A
32 Alundum = 32A
38 Alundum = 38A
57 Alundum = 57A
37 Crystolon = 37C
39 Crystolon = 39C

Coarse	Medium	Fine	Very Fine
10	30	70	220
12	36	80	240
14	364	90	280
16	46	100	320
20	54	120	400
24	60	150	500
		180	600

Soft		Medium			Hard
A	E	I	M	Q	V
B	F	J	N	R	W
C	G	K	O	S	X
D	H	L	P	T	Y
				U	Z

The structure of a wheel refers to the relative spacing of the grains of abrasive. It is designated by a number, the larger the number, the wider the grain spacing.

V = Vitrified
S = Silicate
B = Resinoid
R = Rubber
E = Shellac
O = Magnesite

VITRIFIED BOND
(Blank) = Regular
BE = "BE" Type
A = "A" Type
BA = "BA" Type
P = Porous Type
BEP = "BE" bond, Porous Type

RESINOID BOND
(Blank) = Regular
H = "H" Type
2 = "2" Type
4 = "4" Type
5 = "5" Type
7 = "7" Type
C6* = Cork Resinoid

*Numerals range from 6 to 14 inclusive

SHELLAC BOND
(Blank) = Regular
3 = "3" Type

RUBBER BOND
Bond No. = Regular
R = Resilient Rubber

MAGNESITE
(Blank) = Regular

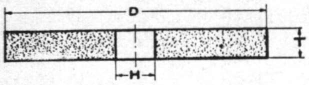
SILICATE
(Blank) = Regular

STANDARD TYPES OF GRINDING WHEELS

Key to Letter Dimensions

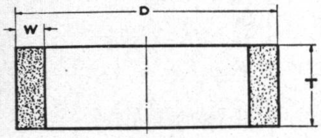
A—Radial width of flat at periphery
B—Depth of blind hole bushing
D—Diameter (over all)
E—Thickness at hole
F—Depth of recess one side
G—Depth of recess other side
H—Hole diameter
J—Diameter of outside flat
K—Diameter of inside flat
N—Depth of relief one side
O—Depth of relief other side
P—Diameter of recess
R—Radius
S—Length of cylindrical section
T—Thickness (over all)
U—Width of edge
V—Face Angle
W—Wall (rim) thickness at grinding face

TYPE 1



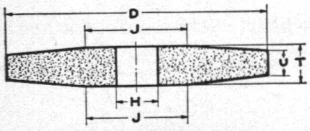
Straight

TYPE 2



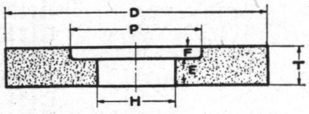
Cylinder

TYPE 4



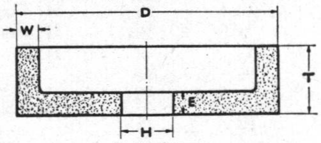
Tapered Two Sides

TYPE 5



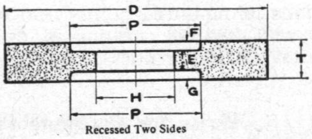
Recessed One Side

TYPE 6



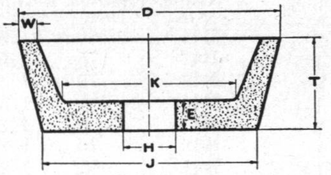
Straight Cup

TYPE 7



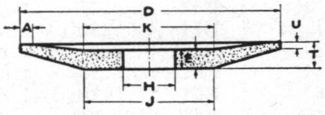
Recessed Two Sides

TYPE 11



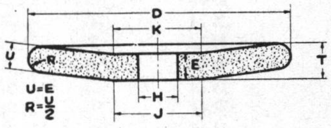
Flaring Cup

TYPE 12



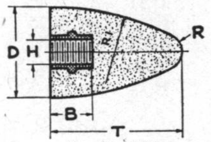
Dish

TYPE 13


D
K
U
R
E
T
H
J
U=E
R=U/2

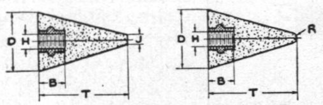
Saucer

TYPE 16



Cone, Curved Side

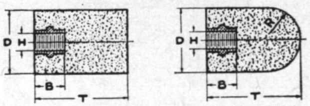
TYPE 17 and 17R


D
H
J
B
T
D
H
R
B
T

Cone, Square Tip

Cone, Round Tip

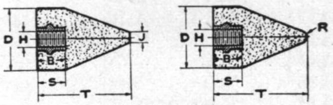
TYPE 18 and 18R



Plug, Square End

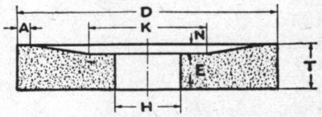
Plug, Round End

TYPE 19 and 19R


D
H
B
J
S
T
D
H
B
R
S
T

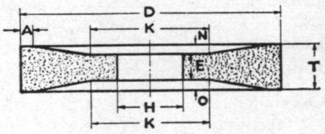
Plugs, Conical End

TYPE 20



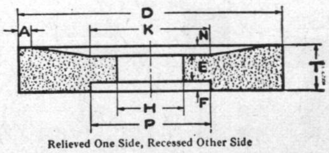
Relieved One Side

TYPE 21



Relieved Two Sides

TYPE 22

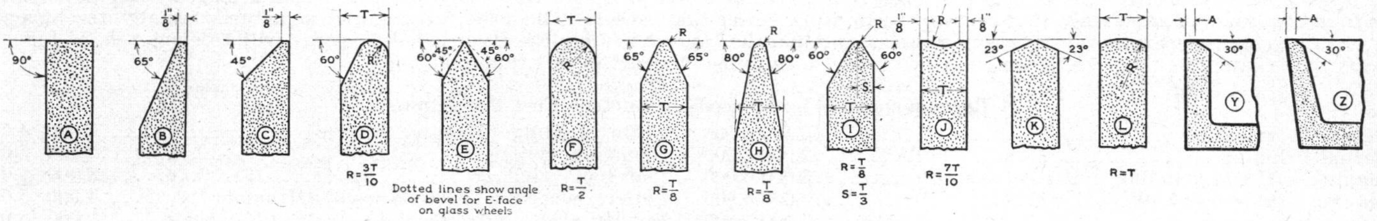


Relieved One Side, Recessed Other Side

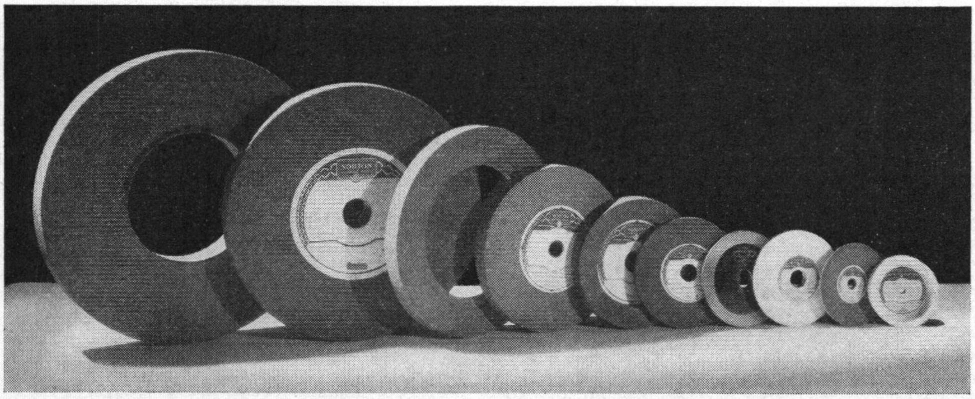
NORTON GRINDING WHEELS

STANDARD SHAPES OF GRINDING WHEEL FACES

When no face is specified a straight "A" face wheel is furnished. The different faces which are regularly supplied are designated by letters as shown below.



STRAIGHT, TYPE 1



A straight wheel is a wheel of any dimension which has straight sides, a straight face and a straight or tapered arbor hole, and is not recessed, grooved, dovetailed, beveled or otherwise changed from a plain straight wheel—unless, due to dimensions, such wheel is classified as a cylinder wheel.

Vitrified and Silicate Bonded—Prices Each

Diam., in.	Thickness of Wheel, in.																	
	⅛	¼	⅜	½	⅝	¾	⅞	1	1¼	1½	1¾	2	2¼	2½	2¾	3	3¼	3½	3¾	4
1	$0.45	$0.45	$0.50	$ 0.50	$ 0.55	$ 0.55	$ 0.60	$ 0.60	$ 0.75	$ 0.90	$ 1.00	$ 1.15	$ 1.30	$ 1.45	$ 1.55	$ 1.70	$ 2.00	$ 2.30	$ 2.60	$ 2.90
1½	.50	.50	.55	.55	.60	.60	.65	.70	.85	1.05	1.20	1.35	1.50	1.70	1.85	2.00	2.30	2.60	2.90	3.20
2	.60	.60	.65	.70	.75	.75	.80	.85	1.05	1.25	1.45	1.65	1.85	2.05	2.25	2.45	2.75	3.05	3.35	3.65
2½	.75	.75	.80	.85	.90	.95	1.00	1.05	1.30	1.55	1.80	2.05	2.25	2.50	2.75	3.00	3.30	3.60	3.90	4.20
3	.90	.90	.95	1.05	1.10	1.20	1.25	1.30	1.60	1.90	2.20	2.50	2.80	3.10	3.40	3.70	4.00	4.30	4.60	4.90
3½	1.70	1.40	1.50	1.60	1.70	1.80	1.90	2.00	2.30	2.65	2.95	3.25	3.55	3.90	4.20	4.50	4.80	5.15	5.45	5.75
4	1.85	1.55	1.65	1.75	1.90	2.05	2.20	2.35	2.70	3.10	3.45	3.80	4.15	4.55	4.90	5.25	5.60	6.00	6.35	6.70
4½	2.15	1.75	1.90	2.05	2.20	2.40	2.60	2.80	3.20	3.65	4.05	4.45	4.90	5.30	5.70	6.15	6.55	6.95	7.40	7.80
5	2.40	2.10	2.30	2.50	2.70	2.90	3.10	3.30	3.80	4.25	4.75	5.20	5.70	6.15	6.65	7.10	7.60	8.05	8.55	9.00
6	2.85	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.60	5.25	5.90	6.55	7.20	7.85	8.50	9.20	9.85	10.50	11.15	11.80
7	3.60	2.90	3.25	3.60	3.95	4.30	4.60	4.90	5.70	6.55	7.40	8.25	9.05	9.90	10.75	11.60	12.45	13.30	14.15	15.00
8	4.40	3.45	3.90	4.30	4.70	5.15	5.55	6.00	7.00	8.00	9.10	10.15	11.20	12.30	13.35	14.40	15.50	16.55	17.60	18.65
9	....	4.05	4.60	5.15	5.65	6.15	6.65	7.15	8.40	9.75	11.05	12.35	13.65	15.00	16.30	17.60	18.90	20.25	21.55	22.85
10	....	4.75	5.40	6.05	6.65	7.25	7.85	8.45	10.05	11.65	13.20	14.80	16.40	18.00	19.60	21.15	22.75	24.35	25.95	27.50
12	....	6.30	7.20	8.10	8.95	9.80	10.65	11.50	13.75	15.95	18.20	20.45	22.65	24.90	27.15	29.35	31.60	33.80	36.05	38.30
14	....	....	....	10.20	11.50	12.80	14.10	15.40	18.40	21.35	24.30	27.25	30.20	33.15	36.10	39.05	42.05	45.00	47.95	50.90
16	....	....	....	.....	.....	16.60	18.30	20.00	23.80	27.60	31.40	35.20	38.95	42.75	46.55	50.30	54.10	57.90	61.70	65.45
18	....	....	....	.....	.....	.....	.....	25.20	29.90	34.65	39.40	44.10	48.85	53.55	58.30	63.05	67.75	72.50	77.25	81.95
20	....	....	....	.....	.....	.....	.....	30.95	36.75	42.55	48.35	54.15	59.90	65.70	71.50	77.25	83.05	88.85	94.65	100.40
22	....	....	....	.....	.....	.....	.....	.....	44.25	51.35	58.45	65.55	72.65	79.75	86.85	93.95	101.05	108.15	115.25	122.35
24	....	....	....	.....	.....	.....	.....	.....	52.55	61.00	69.55	78.10	86.60	95.15	103.70	112.25	120.75	129.30	137.85	146.40
26	....	....	....	.....	.....	.....	.....	.....	64.30	72.25	82.35	92.45	102.55	112.65	122.70	132.80	142.90	153.00	163.10	173.20
28	....	....	....	.....	.....	.....	.....	.....	77.00	84.40	96.15	107.95	119.70	131.50	143.25	155.05	166.80	178.60	190.35	202.15
30	....	....	....	.....	.....	.....	.....	.....	90.65	97.45	111.05	124.60	138.20	151.75	165.35	178.90	192.50	206.05	219.65	233.20

Resinoid Bonded—Prices Each

Diam., in.	Thickness of Wheel, in.															
	$\frac{1}{16}$	$\frac{3}{32}$	⅛	¼	⅜	½	⅝	¾	1	1¼	1½	2	2½	3	3½	4
1	$0.55	$0.55	$ 0.60	$ 0.65	$ 0.70	$ 0.75	$ 0.80	$ 0.80	$ 0.95	$.....	$......	$......	$......	$......	$......	$......
1½	.60	.60	.65	.70	.80	.85	.90	.95	1.05	1.10	1.20	......	......	......	......	......
2	.65	.65	.70	.75	.90	.95	1.00	1.05	1.15	1.25	1.35	1.55	......	......	......	......
2½	.70	.70	.80	.85	1.00	1.05	1.10	1.15	1.25	1.40	1.50	1.85	......	......	......	......
3	.80	.80	.90	1.00	1.15	1.20	1.25	1.35	1.55	1.70	1.80	2.15	......	......	......	......
3½	...	...	1.00	1.15	1.30	1.40	1.50	1.65	1.85	2.05	2.25	2.65	......	......	......	......
4	1.00	1.00	1.10	1.30	1.45	1.60	1.75	1.95	2.25	2.50	2.75	3.25	......	......	......	......
4½	...	....	1.20	1.45	1.70	1.85	2.05	2.25	2.75	3.05	3.35	3.95	......	......	......	......
5	1.20	1.20	1.30	1.60	1.95	2.15	2.35	2.55	3.35	3.70	4.05	4.75	......	......	......	......
6	1.30	1.30	1.45	1.80	2.30	2.55	2.80	3.05	4.05	4.50	5.15	6.25	......	......	......	......
7	1.50	1.50	1.65	2.10	2.70	3.00	3.30	3.60	4.90	5.60	6.50	8.10	......	......	......	......
8	1.70	1.70	1.90	2.45	3.15	3.60	4.05	4.50	6.00	6.90	8.00	10.00	......	......	......	......
10	2.45	2.45	2.70	3.45	4.45	5.20	5.95	6.70	9.10	10.50	12.10	15.10	18.30	21.50	......	......
12	3.35	3.35	3.70	4.90	5.90	6.90	7.90	8.90	11.80	13.80	16.00	20.20	24.80	29.30	......	......
14	....	4.45	4.95	6.45	7.55	8.70	9.90	11.40	15.75	18.60	21.65	27.00	32.60	37.70	43.20	49.20
16	....	6.25	6.25	8.00	9.60	11.15	13.65	16.15	22.00	25.00	28.00	34.00	41.00	48.00	55.00	62.00
18	....	....	8.00	9.50	12.00	14.50	18.00	21.50	28.50	32.00	35.50	44.00	53.00	62.00	71.00	80.00
20	....	....	10.50	12.50	15.50	19.00	23.00	27.00	35.00	39.00	43.50	54.50	65.50	76.50	87.50	98.50
24	....	....	.....	.....	.....	.....	.....	39.00	49.00	56.00	63.00	78.00	94.00	110.00	126.00	142.00
30	....	....	.....	.....	.....	.....	.....	.....	.....	88.00	100.00	122.00	146.00	170.00	194.00	216.00

Note—Allowance is made for hole size 6 in. and over.

Note—List Prices on special shaped wheels for specific applications are shown on following pages where these applications are described.

NORTON GRINDING WHEELS

GRINDING WHEEL SPEEDS

The speed at which a grinding wheel revolves is important because too slow a speed means wastage of abrasive without getting much useful work in return, whereas an excessive speed may result in hard grinding action and may introduce the danger of breakage. As a general proposition, it is better to operate a grinding wheel at somewhere near the speed recommended by the maker, as he has found by years of experience that certain speeds work better than others. The grits, grades and structures usually recommended for certain grinding operations are based on the assumption that approximately the recommended speeds will be employed. If for some reason they cannot be, then the hardness at least must usually be changed to suit this condition.

Recommended Wheel Speeds in Surface Feet Per Minute

Cylindrical grinding	5,500-6,500	Knife grinding (Machine Knives)	3,500- 4,500
Internal grinding	2,000-6,000	Hemming cylinders	2,100- 5,000*
Snagging, offhand grinding (vitrified wheels)	5,000-6,000	Wet tool grinding	5,000- 6,000
Snagging (rubber and resinoid wheels)	7,000-9,500	Cutlery wheels (Large Wheels—Offhand)	4,000- 5,000
Surface grinding	4,000-5,000	Rubber, shellac and resinoid cutting-off wheels	9,000-16,000*

*These higher speeds are recommended only where bearings, protection devices and machine rigidity are adequate.

FOR GENERAL PURPOSE GRINDING

On Bench and Floor Stands; Straight Wheels

Alundum, vitrified bonded.

Wheel size, in.	Each	Wheel marking	Wt. ea., lbs.
6x ¾x ¾	$ 3.50	57A36-P5VBE	1.8
	3.50	57A46-N5VBE	1.8
6x1 x ¾	4.00	57A30-P5VBE	2.4
	4.00	57A46-N5VBE	2.4
8x ¾x ¾	5.15	57A36-P5VBE	3.2
	5.15	57A46-N5VBE	3.2
8x1 x ¾	6.00	57A30-P5VBE	4.3
	6.00	57A46-N5VBE	4.3
10x1½x1¼	11.65	A24-Q5VBE	8.1
	11.65	57A46-N5VBE	8.1
10x2 x1¼	14.80	A24-Q5VBE	13.0
	14.80	57A46-Q5VBE	13.0
12x1½x1¼	15.95	A24-Q5VBE	12.6
	15.95	57A36-P5VBE	12.6
12x2 x1¼	20.45	A24-Q5VBE	18.9
	20.45	57A36-P5VBE	18.9
14x2 x1½	27.25	57A30-Q5VBE	25.7
16x2 x1½	35.20	57A30-Q5VBE	33.7
18x2 x2	44.10	57A30-Q5VBE	42.5
18x2½x2	53.55	57A30-Q5VBE	52.3
20x2 x2	54.15	57A30-Q5VBE	52.3
20x2½x2	65.70	57A30-Q5VBE	66.3
24x2 x2	78.10	57A30-P5VBE	76.3
24x3 x2	112.25	A24-Q5VBE	114.2

FOR DRILLS, LATHE AND PLANER TOOLS

Off Hand Grinding, Bench and Floor Stands; Straight Wheels

Alundum, vitrified bonded.

Wheel size, in.	Each	Wheel marking	Wt. ea., lbs.
6x ¾x1	$ 3.50	57A36-O5VBE (coarse)	1.8
	3.50	57A60-M5VBE (fine)	1.8
8x1 x1	6.00	57A36-O5VBE (coarse)	3.2
	6.00	57A60-M5VBE (fine)	3.2
10x1½x1¼	11.65	57A30-O5VBE (coarse)	8.1
	11.65	57A60-M5VBE (fine)	8.1
12x2 x1¼	20.45	57A30-O5VBE (coarse)	18.9
	20.45	57A60-M5VBE (fine)	18.9
14x2 x1¼	27.25	57A30-O5VBE (coarse)	26.0
	27.25	57A46-M5VBE (fine)	26.0
16x2 x1½	35.20	57A30-O5VBE (coarse)	33.7
	35.20	57A46-M5VBE (fine)	33.7

FOR DRILLS

Machine Grinding

Alundum; vitrified bonded.

Wheel size, in.	Each	For drill grinders	Wheel marking	Wt. ea., lbs.
8 x2¼x5⅛	$12.30	Sellers	ME-2907 A46-L5VBE	5.7
8$\frac{7}{16}$x1¾x6	11.20	American	ME-5411 19A46-LV	4.3
9 x2¼x4⅝	14.90	Oliver Worcester	ME-17203 38A46-M5VBE	9.0
9½x1½x1½	12.45	Yankee	ME-203 19A46-KV	6.3
10½x1½x1	16.75	Gallmeyer-Livingston	Rec. 1 side 19A46-KV 6½x1 in.	7.5

FOR CEMENTED CARBIDE SINGLE-POINT TOOLS

Crystolon; vitrified bonded.

Wheel size, in.	Each	Norton blueprint	Type	Wheel marking	Wt. ea., lbs.
6 in. Baldor, Delta or Hammond Grinders					
6x1x4	$7.60	D47466	plate	39C60-17V (rough.)	1.8
	7.60		mtd.	39C100-H7V (fin.)	1.8
6 in. ExCellO or Carboloy Grinders					
6x1½x3	$8.85	ME31093	plate	39C60-17V (rough.)	1.4
	8.85		mtd.	39C100-H7V (fin.)	1.4
10 in. and 14 in. ExCellO or Carboloy Grinders					
10x2, 1½ rim	$19.40	D63487	plate	39C60-G12VP (rough.)	7.8
	19.40		mtd.	39C100-H7V (fin.)	7.8
10x1½x2	11.65	Strgh. Whl.		39C60-17V (rough.)	9.6
14x4, 1½ rim	44.30*	D52814	plate	39C60-G12VP (rough.)	25.3
	44.30*		mtd.	39C100-H7V (fin.)	25.3
10 in. and 14 in. Hammond Grinders					
10x2, 1½ rim	$19.40	D83831	plate	39C60-G12VP (rough.)	7.8
	19.40		mtd.	39C100-H7V (fin.)	7.8
14x4, 1½ rim	44.30*	ME52814	plate	39C60-G12VP (rough.)	25.3
	44.30*		mtd.	39C100-H7V (fin.)	25.3
Chip Breaker Grinding—Diamond					
4x⅛x⅝ or 1¼	$113.75	Strgh. Whl.	DIT	D100S-R100B⅛	.25
4x¼x⅝ or 1¼	185.45	Strgh. Whl.	DIT	D150-N100V⅛	.37
6x⅛x⅝ or 1¼	153.65	Strgh. Whl.	DIT	D100S-R100B⅛	.50
6x¼x⅝ or 1¼	259.35	Strgh. Whl.	DIT	D150-N100V⅛	.63
Honing—Hand Hones					
¼x7/16x4	$30.45	Diam., one insert 1 in. long	DHI	D320-V$\frac{1}{16}$	.13
¼x¾x4	.35	Crystolon Vitrified		37C280-NV	.13

*Small extra net charge for wire winding.

FOR ROCK BIT GRINDING

Fluting; K Face, 30° Angle; No. 7 Treated

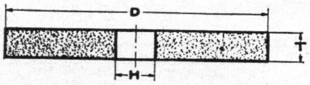
Wheel size, in.	Each	Wheel markings	Wt. ea., lbs.
12x1¾x 1	$19.35	A36-L5VBE	16.7
12x1¾x 1¼	19.35	A36-L5VBE	16.5
18x1½x10	33.25	A36-L5VBE	22.0
18x1½x10	33.25	A36-M5VBE	22.0
18x1¾x 1¾	41.15	A36-M5VBE	37.6
18x1¾x10	35.80	A36-L5VBE	26.0
18x1¾x10	35.80	A36-M5VBE	26.0
18x2 x10	41.75	A36-L5VBE	31.7

Gauging; Straight Face

Wheel size, in.	Each	Wheel markings	Wt. ea., lbs.
12x1½x 1	$15.95	A36RV	14.2
12x1½x 1¼	15.95	A36RV	14.1
18x1¼x10	27.20	A36RV	18.7
18x1¾x 1¾	39.40	A36RV	37.6
18x1¾x10	35.80	A36RV	26.0
18x2 x10	40.00	A36RV	31.7

NORTON GRINDING WHEELS

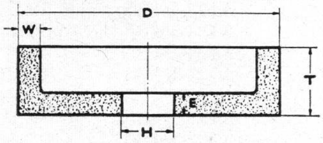
FOR MILLING CUTTERS
High Speed Steel



Type No. 1
Straight Wheel

Alundum; vitrified bonded.

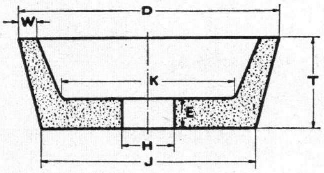
Wheel size, in.	Each	Wheel marking	Wt. each, lbs.
6x½x1¼	$3.00	38A46-K5VBE	1.2
6x½x1¼	3.00	38A60-K5VBE	1.2
7x½x1¼	3.60	38A46-K5VBE	1.6
7x½x1¼	3.60	38A60-K5VBE	1.6



Type No. 6
Straight Cup Wheel

Alundum; vitrified bonded.

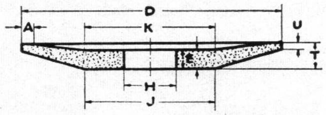
Wheel size, in.	Each	Norton blueprint	Wheel marking	Wt. each, lbs.
5x1½x1¼	$5.15	ME-19243	38A46-K5VBE	1.0
			38A60-K5VBE	1.0



Type No. 11
Flaring Cup Wheel

Alundum; vitrified bonded.

Wheel size, in.	Each	Norton blueprint	Wheel marking	Wt. each, lbs.
(3 -2¼)x1¼x ½	$2.10	ME-21560	32A46-K5VBE	.3
			32A60-K5VBE	.3
(3¼-2⅛)x1¼x ½	3.00	ME-21561	32A46-K5VBE	.4
			32A60-K5VBE	.4
(4 -3)x1½x1¼	3.80	ME-19237	32A46-K5VBE	.7
			32A60-K5VBE	.7
(4½-3¾)x2 x1¼	5.15	ME-20115	32A46-K5VBE	1.0
			32A60-K5VBE	1.0
(5 -3¾)x1¾x1¼	5.65	ME-21563	32A46-K5VBE	1.1
			32A60-K5VBE	1.1



Type No. 12
Dish Wheel

Alundum; vitrified bonded.

Wheel size, in.	Each	Norton blueprint	Wheel marking	Wt. each, lbs.
4½x½x ½	$2.55	ME-19227	38A46-K5VBE	.3
			38A60-K5VBE	.3
6 x½x1¼	3.70	ME-19229	38A46-K5VBE	.7
			38A60-K5VBE	.7
6 x¾x1¼	4.20	ME-19230	38A46-K5VBE	.9
			38A60-K5VBE	.9

FOR MILLING CUTTERS
Carbide Tipped or Inserted Blades

Diamond, resinoid bonded.

Wheel size, in.	Each	Norton blueprint	Wheel marking	Wt. ea., lbs.
Type No. D11B—Flaring Cup				
3¾x1½x1¼	$177.40	ME-29263	D150-L100B1/16	1
Type No. D12W—Dish				
6 x1 x1¼	$155.20	ME-27758	D150-N100B1/16	1
Type No. 6—Straight Cup Wheel				
Crystolon; vitrified bonded.				
5 x1½x1¼	$5.15	ME-19243	39C60 -17V (roughing) 39C100-17V (fin.)	
Type No. 11—Flaring Cup Wheel				
(4-3) x1½x1¼	$3.80	ME-19237	39C60 -17V (roughing) 39C100-17V (fin.)	

FOR INTERNAL GRINDING
Fixed Feed

Straight and recessed wheels; alundum; vitrified. All common sizes. Wheel marking, 32A60-K5VBE.

Offhand

Mounted wheels and points. See page 221 for standard shapes, sizes and list prices.

Alundum; vitrified bonded. Wheel marking: 38A60-MV (coarse), 38A90-MV (medium), 38120-MV (Fine).

FOR CYLINDRICAL GRINDING

Wheel size, in.	Each	Wheel markings: Hardened Steel	Wheel markings: Soft Steel	Wt. each, lbs.
6x ½x1¼	$ 3.00	32A60-L5VBE	57A60-LVBE	1.2
10x ½x3	6.05	32A60-L5VBE	57A60-MVBE	3.0
12x1 x5	11.50	32A60-L5VBE	57A60-MVBE	7.0
14x1 x5	15.40	32A60-L5VBE	57A54-L5VBE	13.0
14x2 x5	27.25	57A60-L5VBE	57A54-M5VBE	22.8
20x2 x5	54.15	57A54-L5VBE	57A54-M5VBE	49.7

Wheel size, in.	Each	Wheel markings: Brass, Cast Iron and Aluminum	Wheel markings: General Purpose	Wt. each, lbs.
6x ½x1¼	$ 3.00	37C46-K5V	32A60-L5VBE	1.2
10x ½x3	6.05	37C46-K5V	32A60-M5VBE	3.0
12x1 x5	11.50	37C36-K5V	32A60-M5VBE	7.9
14x1 x5	15.40	37C36-K5V	32A60-M5VBE	13.0
14x2 x5	27.25	37C36-K5V	32A60-M5VBE	22.8
20x2 x5	54.15	37C36-P5V	57A54-L5VBE	49.7

FOR SURFACE GRINDING

Wheel size, in.	Each	Wheel markings: Hardened Steel	Wheel markings: Soft Steel	Wt. each, lbs.
6x ½x1¼	$ 3.00	32A46-H8VBE	32A46-J5VBE	1.2
7x ½x1¼	3.60	32A46-H8VBE	32A46-J5VBE	1.6
8x ½x1¼	4.30	32A46-H8VBE	32A46-J5VBE	2.1
10x ¾x2½	7.25	32A46-H8VBE	32A46-J5VBE	4.7
10x1 x1⅜	8.45	32A46-H8VBE	32A36-J5VBE	6.6
12x1 x1⅜	11.50	32A36-H8VBE	32A36-J5VBE	9.5

Cast Iron—With any of the above sizes of wheels, use 37C36-J8V.

General Purpose—With any of the above sizes of wheels, use 32A46-I8VBE.

FOR CUTTING OFF
High Speed Cut-Off Machines (Dry)

Wheel speed: 15,000 to 16,000 s.f.p.m.
Alundum; resinoid bonded.

Material	Wheel size, in.	Each	Wheel marking	Wt. each, lbs.
Stainless steel High speed steel Drill rod	12x3/32x ¾	$ 3.35	A245-Q8B	.9
Low carbon steel Cold rolled steel	14x⅛x ⅞	4.95	A245-Q8B	2.1
Chr-nickel steel Aluminum	16x⅛x1	6.25	A245-Q8B	2.7
Brass rod and	12x3/32x ¾	3.35	A46-S8B	.9
heavy tubing	14x⅛x1	4.95	A46-S8B	2.1
Steel pipe	12x3/32x1	3.35	A30-U7B	.8
Boiler tubing	14x⅛x1	4.95	A30-U7B	2.1
Furnace brick	12x⅛x1	3.70	37C24-08B	1.5
and refractories	14x⅛x1	4.95	37C24-08B	2.1
Brass, bronze, aluminum gates and risers	14x5/32x1	21.50	A241-R14BN	3.0
(Tabor and Fox foundry cut-off machines)	16x5/32x1	28.25	A241-R14BN	4.0

Wet Cut-Off Machines

Wheel speed; 9000 to 12,000 s.f.p.m.
For steel. Alundum; rubber bonded.

Wheel size, in.	Each	Wheel marking	Wt. each, lbs.
16x3/32x1	$4.70	A60-V8R-30	4.0

Skilsaw Cut-Off Wheels

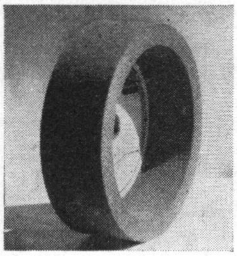
Crystolon; resinoid bonded.

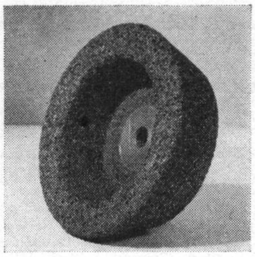
Norton blueprint ME-21077; "D" sides; diamond shaped arbor hole.

Wheel size, in.	Each	Wheel marking	Wt. each, lbs.
For Masonite, Transite and Asbestos			
6x⅛	$1.45	37C24-N8B	.3
7x⅛	1.65	37C24-N8B	.4
8x⅛	1.90	37C24-N8B	.5
For Brick, Marble and Tile			
6x⅛	$1.45	37C24-08B	.3
7x⅛	1.65	37C24-08B	.4
8x⅛	1.90	37C24-08B	.5

NORTON GRINDING WHEELS

FOR FOUNDRY GRINDING





Portable Grinders

High Speed Types; 9500 s.f.p.m.

Wheel size, in.	Each	Wheel marking	Abrasive and bond	Wt. each, lbs.
For Steel and Annealed Malleable Castings				
6x1x⅝	$4.05	A16-Q4B7	Alun. Res.	3.1
8x1x⅝	6.00	A16-Q4B7	Alun. Res.	5.4
(6-4¾)x2x⅝ B/P ME-22100 (1 in. rim) flaring cup, steel bushing	7.35	A16-Q4B7	Alun. Res.	2.8
(6-4¾)x2x⅝ B/P ME-24180 (1½ in. rim) flaring cup, steel bushing	7.35	A16-Q4B7	Alun. Res.	3.0
6x2x⅝ B/P ME-21512 (1¼ in. rim) straight cup, steel bushing	6.80	A16-Q4B7	Alun. Res.	3.8
2¾x3½ cone B/P ME-18265 ⅝ in. threaded hole	4.75	A24-Q5VBE	Alun. Vit.	1.3
For Gray Iron and Unannealed Malleable Castings				
6x1x⅝	$4.05	37C16-R4B7	Cryst. Res.	3.1
8x1x⅝	6.00	37C16-R4B7	Cryst. Res.	5.4
(6-4¾)x2x⅝ B/P ME-22100 1 in. rim) flaring cup, steel bushing	7.35	37C16-Q4B7	Cryst. Res.	2.8
(6-4¾)x2x⅝ B/P ME-24180 (1½ in. rim) flaring cup, steel bushing	7.35	37C16-Q4B7	Cryst. Res.	3.0
6x2x⅝ B/P ME-21512 (1¼ in. rim) straight cup, steel bushing	6.80	37C16-Q4B7	Cryst. Res.	3.8
2¾x3½ cone B/P ME-18265 ⅝ in. threaded hole	4.75	37C24-S5V	Cryst. Vit.	1.3

Slow Speed Types: 6500 s.f.p.m.

Wheel size, in.	Each	Wheel marking	Abrasive and bond	Wt. each, lbs.
5x1x½	$3.30	A24-Q5VBE	Alun. Vit.	2.1
6x1x⅝	4.00	A24-Q5VBE	Alun. Vit.	3.1
8x1x⅝	6.00	A24-Q5VBE	Alun. Vit.	5.4
2¾x3½ cone B/P ME-18265 ⅝ in. threaded hole	4.75	A24-S5V	Alun. Vit.	1.3
For Gray Iron and Unannealed Malleable Castings				
5x1x½	$3.30	37C24-R5V	Cryst. Vit.	2.1
6x1x⅝	4.00	37C16-Q5V	Cryst. Vit.	3.1
8x1x⅝	6.00	37C16-Q5V	Cryst. Vit.	5.4
2¾x3½ cone B/P ME-23107 ½ in. threaded hole	4.75	37C24-S5V	Cryst. Vit.	1.3
2¾x3½ cone B/P ME-18265 ⅝ in. threaded hole	4.75	37C24-S5V	Cryst. Vit.	1.3

FOR FOUNDRY GRINDING

Steel Castings, Annealed Malleable Castings, Steel Forgings

Wheel size, in.	Each	Wheel markings Floorstand Grinder	Wheel markings Swing Frame Grinder	Wt. each, lbs.
High Speed Equipment; 9500 s.f.p.m.				
Alundum; resinoid bonded.				
12x2 x 4	$20.20	A16-O4B5	A123-P4B5	18.7
16x2 x 6	31.80	A14-O4B5	A123-P4B5	36.9
16x2½x 6	38.45	A14-O4B5	A123-P4B5	46.4
18x2 x 7	41.15	A14-O4B5	A123-P4B5	46.7
20x2½x 6	62.95	A14-O4B5	A123-P4B5	77.4
20x3 x10	65.75	A14-O4B5	A123-P4B5	77.0
24x2 x12	67.90	A14-O4B5	A123-P4B5	73.6
24x2½x12	81.60	A14-O4B5	A123-P4B5	91.0
24x3 x12	95.35	A14-O4B5	A123-P4B5	110.0
30x2½x12	133.60	A14-O4B5	....	160.0
30x3 x12	155.35	A14-O4B5	....	202.0
Slow Speed Equipment: 6500 s.f.p.m.				
Alundum; vitrified bonded.				
14x2 *	$27.25	57A16-Q5VBE	57A14-Q5VBE	25.6
16x2 *	35.20	57A16-Q5VBE	57A14-Q5VBE	33.6
18x2 *	44.10	57A16-Q5VBE	57A14-Q5VBE	42.5
18x2½*	53.55	57A16-Q5VBE	57A14-Q5VBE	52.3
20x2 *	54.15	57A16-Q5VBE	57A14-Q5VBE	52.4
20x2½*	65.70	57A16-Q5VBE	57A14-Q5VBE	66.3
24x2 *	78.10	57A14-Q5VBE	57A14-Q5VBE	76.4
24x3 *	112.25	57A14-Q5VBE	57A14-Q5VBE	114.2

Specify No. 6 treated for above wheels.

*Hole size as ordered; weights based on 2 in. hole.

Gray Iron Castings, Unannealed Malleable Castings

Crystolon; vitrified bonded. For floor stands and swing frame grinders.

Slow Speed Equipment: 6500 s.f.p.m.

Wheel size, in.	Each	Wheel marking	Wt. each, lbs.
12x2 *	$ 20.45	37C20-Q5V	18.6
14x2 *	27.25	37C20-Q5V	25.6
16x2 *	35.20	37C20-Q5V	33.6
16x2½*	42.75	37C20-Q5V	42.3
18x2 *	44.10	37C16-R5V	42.5
18x2½*	53.55	37C16-R5V	52.3
18x3 *	63.05	37C16-R5V	64.2
20x2 *	54.15	37C16-R5V	52.4
20x3 *	77.25	37C16-R5V	79.2
24x2 *	78.10	37C16-R5V	76.4
24x3 *	112.25	37C16-R5V	114.2

*Hole size as ordered; weight based on 2 in. hole.

FOR WELD GRINDING

Portable Grinders

For smoothing carbon and alloy steel welds.

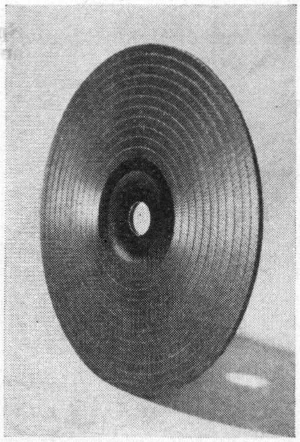
All alundum abrasive.

Wheel size, in.	Each	Wheel marking	Bond	Wt. each, lbs.
6x1x⅝	$4.05	A16-R4BH or A20-Q4B5*	Res. Res.	3.1 3.1
8x1x⅝	6.00	A16-R4BH or A20-Q4B5*	Res. Res.	5.4 5.4
2¾x3½ cone B/P ME-18265 ⅝ in. thd. hole	4.75	A24-S5V	Vit.	1.3
(6-4¾)x2x⅝ B/P ME-22100 flaring cup (steel bushing)	7.35	A16-R4B7 or A20-P4B5*	Res. Res.	3.0 3.0
6x2x⅝ B/P ME-21512 1¼ in. rim straight cup (steel bushing)	6.80	A16-R4B7 or A20-P4B5*	Res. Res.	4.8 4.8

*Specify "B5" Resinoid Bond type for lighter work.

NORTON GRINDING WHEELS

FOR WELD GRINDING



Alundum Reinforced Resinoid Bonded (Offset Hub) "Hat" Grinding Wheels

For use on sander type (right angle head) portable grinders.

These are exceptionally strong, light, fast-cutting wheels designed for use on sander type portable grinders and are especially satisfactory when used for cutting down weld beads, deburring, cleaning and smoothing castings preparatory to painting, light cut-off work, etc. Generally used at about a 30° angle to the work.

First it cuts, then it smooths, permitting rough grinding and finish grinding with the same wheel.

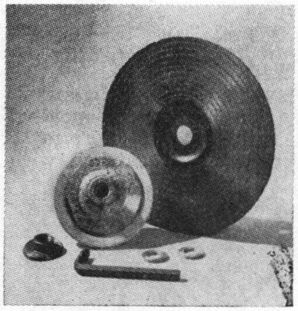
Safe Operating Speeds

7 in. diameter wheel, up to 6000 RPM.
9 in. diameter wheel, up to 4070 RPM.
The best general specification is A241-014BD.

Quantity Prices Each

Wheel size, in.	1–9	10	50	100	Net wt. each, oz.
7x⅛x⅞	$3.69	$3.05	$2.69	$2.51	7
Wheel size, in.	1–4	5	25	50	Net wt. each, oz.
7x3/16x⅞	$4.70	$3.99	$3.53	$3.29	9
7x¼x⅞	5.81	4.94	4.35	4.07	12
9x⅛x⅞	5.19	4.83	4.26	3.98	10
Wheel size, in.	1	2	10	20	Net wt. each, oz.
9x3/16x⅞	$7.47	$6.35	$5.60	$5.32	14
9x¼x⅞	9.27	7.83	6.96	6.50	20

"HAT" WHEEL ADAPTER KITS



For Use with Above Wheels

The new "Hat" wheel is used with a special backing pad or recessed back flange to properly support it in operation.

The kit consists of a reinforced plastic pad, a threaded steel flange nut, spacing washers and an adapter (if required). This kit enables you to mount a "Hat" wheel on any standard right angle portable grinder or sander.

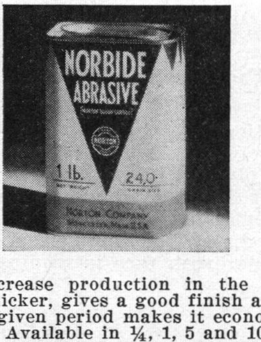
	Per kit
"Hat" Wheel Adapter Kit — As described above; wt. each 10½ oz.	$5.25

One kit in a box.

Note

When ordering "Hat" Wheels or Adapter Kits, either machine spindle diameter and thread or the make and model of the machine must be specified. While ⅝ in.—11 and ½ in.—13 are the more comon spindle and thread sizes, special adapters are available which permit the wheel to be mounted on any spindle.

NORBIDE ABRASIVE



The extreme hardness of Norbide Abrasive makes it suitable for many lapping operations that heretofore have been possible only with diamond dust, and at a considerable saving.

Norbide abrasive is extensively employed for the machine lapping of cemented carbide wire drawing dies—both on new dies and for refinishing. It is also used for lapping flat cemented carbide tools and for lapping mineralogical and metallographic specimens, and is most satisfactory as a substitute for diamond powder for use by lapedaries in cutting and polishing of materials having a Moh's hardness of 6 or more, excepting only the diamond.

Norbide Abrasive is also being used to increase production in the lapping of hardened steel parts. It acts quicker, gives a good finish and the increased number of parts lapped in a given period makes it economical.

Available in ¼, 1, 5 and 10 lb. cans in standard grain sizes up to 240 and in addition sizes: 280, 320F, 400, 500, 600, 800.

For most roughing operations size 220 or 240 are used. The majority of finishing is done with 320F. Finer sizes give a better finish but have a slower cutting action.

Prices on Request

ABRASIVE GRAIN

NORTON ALUNDUM AND CRYSTOLON

NORTON
Abrasive Grain
GRINDING AND POLISHING
NORTON
Abrasive Grain

Alundum grain is one of the most widely used abrasives in grinding and polishing operations.

The purity of Alundum abrasive, the peculiar structure of the grain and character of fracture when at work gives this cutting material many advantages over all other abrasives in polishing on a great variety of work such as plows, shovels, forks, hoes and other agricultural implements; cutlery, stove parts, automobile parts, adding machine parts, typewriter parts, and various other kinds of tools and implements; in glass working and on practically every known operation on brass.

Standard Sizes of Alundum and Crystolon Grain

Listed from coarse to fine.

Screened Sizes—*4, *6, 8, 10, 12, 14, 16, 20, 24, 30, 36, 46, 54, 60, 70, 80, 90, 100, 120, 150, 180, 220 and 240.
Unclassified Flours—F, 2F, 3F, 4F and XF.
Classified Flours—280, 320, 400, 500 and 600.

*Crystolon is not available in sizes No. 4 and 6.

For Glass Beveling and Edging

Crystolon cuts fast, leaves a good finish and breaks down slowly which, of course, means long life. The exceptionally slow breakdown of Crystolon abrasive is due to the hardness and strength of the silicon carbide grains.

Standard Sizes of Containers

Kegs—Approximately 350 lbs. and 100 lbs. Refer to average net weight of containers.
Drums—50 and 25 lbs.
Cans—10, 5 and 1 lb.

Abrasive Grain Selection

The following table of recommendations is offered merely as a general guide, as it is realized that different plants have different conditions to meet. All specifications listed below are for Alundum except where Crystolon is indicated.

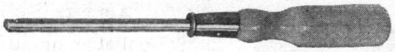
Parts	Polishing Operation				
	1st	2nd	3rd	4th	5th
Alum., sand cast					
(Inside-Bottom)	46				
(Outside)	70	150	Buff		
Aluminum, die cast	150*	Buff			
Aluminum, sheet ..	120*	180*	Buff		
Auto Bumpers ...	80	120	180*	220*	
Brass, sand cast ..	70*	180*			
Brass, sheet	180*	Buff			
Glass, Beveling ..	80 Crys.	120	220	Pumice	
Glass, Prescription Lenses	70 Crys. or Alun.	180	Optical Flour, Medium	Rouge	Rouge
Telescope Lenses	70	180	320	Optical Flour, Medium	Optical Flour, Fine
Granite Polishing .	36 Crys.	90 Crys.	150 Crys.	F Crys.	3F Crys.
		Oper. No. 6 600 Alundum		Oper. No. 7 Tin Oxide	
Gray Iron	80	150			
Knives — table and steel blades		150*	180+240	Buff	
Knives—table backs	46				
Monel Metal, cast	80	120	150	180*	Buff
Plows	24	80	150	220*	
Plow Shares	36				
Plow Discs	36	80			
Shovels, blades ...	36	120			
Stainless Steel, Mirror finish ..	70	120*	150*	220 or 3F*	Buff
Stainless Steel, Commercial finish	80	100*	120*	150*	

*Denotes grease or oil wheel.

Prices on Request

GRINDING WHEEL DRESSERS

CARBOLOY DIAMOND



For All Straight Cylindrical Dressing

Consists of many diamond particles firmly held in place in a special matrix of Carboloy cemented carbide. It has many advantages which result in more convenient, economical use.

Because of their unusual performance and unprecedented economy, diamond wheel dressers are used by many of the nation's largest industrial plants, including practically all prominent automotive manufacturers.

For an average reduction of at least 25% in dresser costs over average single diamond dresser, try Carboloy dressers.

Three standard sizes suitable for rough, semi-finish and finish dressing.

No. 2B—For wheels of a max. 16 in. diam. or max. 1½ in. width.

No. 3C—For wheels of a max. 24 in. diam. or max. 2½ in. width.

No. 4C—For wheels of a max. 42 in. diam. or max. 8 in. width.

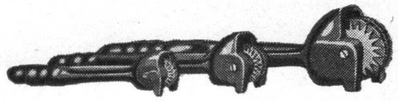
If wheels are of grade N or harder, go to next larger dresser if wheel is near maximum width or diameter.

Complete with Holder

Nos.	Each 1-4	Each 5-9	Each 10-49	Diamond impregnated portion Diam., in.	Diamond impregnated portion Lgth., in.	Wt. ea., lbs.
2-B	$13.09	$11.66	$10.29	¼	5/16	⅛
3-C	17.22	15.57	14.14	5/16	5/16	¼
4-D	20.90	19.91	18.98	⅜	⅜	⅜

Five in a box.

DESMOND HUNTINGTON



Improved Type, Hooded

Star shaped hardened steel cutters, patented bearings with a hardened bushing revolving on a spindle between two hardened steel side washers. Japanned iron handle. No. 0 has two sets of cutters.

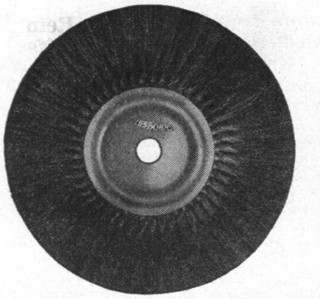
Nos.	0	1	2
Length, in.	11¼	12	15
Diam. cutters, in.	1¼	1½	2⅜
Wt. each, lbs.	1¾	2	4¾
Each	$1.10	1.90	3.25
Cutters Per dozen sets	1.50	2.75	9.50
Pins Each	.03	.075	.10
Bushings Each	.03	.075	.10

One in a box.

In our Engineering Department, as a part of our Service, there is a corps of experienced and highly trained specialists whose duty it is to assist customers when such help is desired.

WIRE WHEEL BRUSHES

OSBORN KNOT TYPE DISC CENTER



For High Speed Heavy Duty Applications

Designed for safe, fast and efficient operation on modern high speed equipment where extra heavy brushing is required.

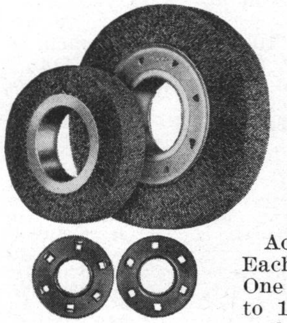
Fast cutting with light pressure. Each knot or tuft is securely mounted in the one-piece center. There are no welds or joints to fail under severe operations.

The smaller diameters are suitable for use on portable tools. Recommended for high speed metal cleaning jobs such as weld cleaning, removing rust, paint and corrosion, de-burring gears, forgings and heavy machined parts.

Nos.	Per dozen	Diam., in.	Width face, in.	Wire size, in.	Arbor hole, in.	Max. RPM	Wt. per doz., lbs.
1104	$30.96	4	⅜	.014	½	8000	3
1106	36.36	6	½	.0162	⅝	6000	12

One in a box.

OSBORN MASTER



Fast Cutting, Long Wearing

Rigidly built as a strong complete unit. Steel wire sections are gripped by two steel face plates brought together under 3½ tons pressure. This unit built design gives you a heavily filled wheel brush with a wide face and which can be quickly slipped on and off a shaft.

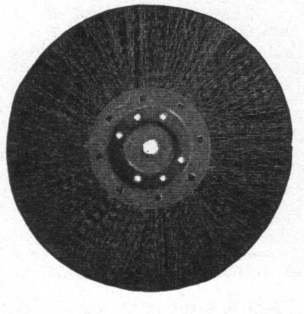
Accurately trimmed, evenly balanced. Each wheel has a standard 2 in. opening. One set of adapters in arbors sizes from ¼ to 1¾ in. as specified, is furnished with each wheel.

Nos.	Each	Diam., in.	Size wire, in.	Width, in. at face	Width, in. at arbor	Max. RPM	Wt. ea., lbs.
157	$ 4.59	4	.0118	1⅛	⅞	4500	¾
154	6.30	6	.0118, .014	1¼	1⅛	4000	1¾
153	8.69	8	.0095, .014	1⅜	1	3500	2½
152	15.82	10	.0104	2	1¼	3000	4½
151	19.22	12	.020	2¼	1⅜	2750	6

One in a box.

Note—When ordering, specify wire size and size of arbor hole wanted in adapters.

OSBORN MONITOR



Narrow Face Sections, Flexible Action

Each section is a complete wheel brush securely fastened between two steel face plates and designed for use without hub or adapters. Can be used individually or a number can be mounted directly on shaft or arbor where a wide brush face is required.

		Per dozen
No. 3910	—6 in. diam., ½ in. wide at face, ⅜ in. wide at arbor, ⅝ in. arbor hole, .008 in. wire; wt. doz. 7 lbs.	$26.64

One dozen in a box.

COATED ABRASIVES

BEHR-MANNING

Explanation of Trade Names, Types of Abrasives, Bonds and Backing

There are five types of abrasives falling into two groups.

NATURAL ABRASIVES

Flint—White American quartz, used on "Sand" paper.

Emery—A dark mineral mined in the Isle of Emery. Composed of 50% Aluminum oxide and 50% Iron oxide. The oldest abrasive in use; not recommended for heavy work.

Garnet—A red mineral found in the Adirondack Mountains. This is the same Garnet as used in jewelry and is a semi-precious stone in its pure form. A good wood sanding abrasive.

MANUFACTURED OR ARTIFICIAL ABRASIVES

Aluminum Oxide—An electric furnace "artificial" man-made abrasive. A 100% pure cutting tool, very tough and long lasting..

Silicon Carbide—Also an electric furnace "artificial" abrasive. Exceeded in hardness only by the diamond, this type of grain fractures down readily to present new cutting surfaces.

TRADE NAMES FOR ABRASIVES

Durite—"Silicon Carbide" in paper or cloth.

Metalite—"Aluminum Oxide" in cloth and fibre form only, for metal work.

Adalox—"Aluminum Oxide" in paper backed or cloth back special type, for wood or metal.

Speed Grits—"Silicon Carbide" for floor sanding.

COATING DESIGNATIONS

"Lightning"—Signifies electro-coating, Behr-Manning's patented method of high voltage coating that compels every abrasive particle to stand on edge and thus present the sharpest possible cutting surface.

"Closekote"—100% of backing, whether paper, cloth or fibre is covered with grain, for fast cutting.

"Openkote"—50% of backing is covered with grain. Used on paint and very soft materials for non-loading qualities.

BONDS

"Durabond"—A secret Behr-Manning process for hardening and moisture-proofing all types of adhesives used in coated abrasives.

"Resinall" or "Resinized"—Signifies a plastic type resin bond used for best grain adhesion.

BACKINGS

Paper—A high grade special backing made for coated abrasives. Made in the following weights:

A—Very light C—Light D—Medium heavy E—Extra heavy

Cloth—Highest grade cotton cloth.
"J" weight—Light and flexible
"X" weight—Heavy duty; not so flexible

Combination—Paper and cloth combined to make an extra heavy backing.

Fibre—Vulcanized fibre backing; used only in discs for portable machines.

Speedwet—Signifies a 100% waterproof product whether in paper, cloth or fibre backing.

GRADING SYMBOLS USED IN GRIT SELECTION OF COATED ABRASIVES

Mesh numbers such as 24, 60, 180 are used on most products. However symbols such as 7/0, 2/0, 1½ are also used to designate the coarseness or fineness of sandpaper. Some products will show both mesh numbers and symbols for convenience in ordering.

The grit or **Mesh Numbers** are used on all metal working products. The abrasive grain is graded according to the screen or mesh through which it will pass. The larger the number the smaller the grain. Thus No. 120 is finer than No. 80. This is the same method used in grinding wheels.

Symbols—(7/0, 0, 2) are used mostly in wood working abrasives. 0 is taken as a medium and all symbols such as 2/0, 3/0, etc. are consecutive degrees finer. All symbols the other way from 0 (½, 1, 1½) are coarser.

Grading Chart

Showing comparison between the two methods.

Very Fine	10/0	400
	9/0	320
	8/0	280
	7/0	240
	6/0	220
Fine	5/0	180
	4/0	150
	3/0	120
	2/0	100
Medium	0	80
	½	60
	1	50
Coarse	1½	40
	2	36
	2½	30
Very Coarse	3	24
	3½	20
	4	16
	4½	12

ORDERING COATED ABRASIVES

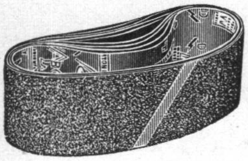
When ordering coated abrasives in any form be sure to give the following information:

1—Dimensions of material or machine it is to be used on.
2—Type of abrasive and backing desired.
3—If not sure what to order, give name and type of machine and the kind of material being sanded.
4—Try to order in standard packages.

ABRASIVE CLOTH BELTS

BEHR-MANNING "ADALOX"

For Portable Belt Sanders; on Wood and Metal



Closekote; Heavy "X" Weight Backing

Aluminum oxide grain, electro-coated on heavy duty cloth. Belt is joined with Behr-Mannings famous "Uniflow" joint for smooth operation on portable machines.

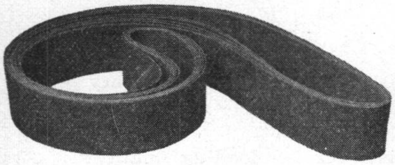
Recommended for sanding of all types on wood and metal.

Belt size, in.	Grit Nos.																	
	120-X (3/0)		100-X (2/0)		80-X (0)		60-X (½)		50-X (1)		40-X (1½)		36-X (2)		30-X (2½)		24-X (3)	
	Per 100	Wt. per 100, lbs.	Per 100	Wt. per 100, lbs.	Per 100	Wt. per 100, lbs.	Per 100	Wt. per 100, lbs.	Per 100	Wt. per 100, lbs.	Per 100	Wt. per 100, lbs.	Per 100	Wt. per 100, lbs.	Per 100	Wt. per 100, lbs.	Per 100	Wt. per 100, lbs.
2 x21	$27.20	6	$27.20	8	$27.60	8	$28.80	10	$29.60	10	$30.40	10	$31.20	12	$32.40	14	$33.60	14
2¼x21$\frac{5}{16}$	30.40	8	30.40	8	31.20	8	32.40	10	33.20	10	34.40	12	36.00	14	37.20	16	38.40	16
3 x23¾	34.40	10	34.40	12	35.20	12	37.20	14	38.40	16	40.00	18	41.60	20	43.60	22	45.20	24
3 x24	34.40	10	34.40	12	35.20	12	37.20	14	38.40	16	40.00	18	41.60	20	43.60	22	45.20	24
3 x25	35.20	12	35.20	12	36.00	12	38.00	14	39.20	16	40.80	18	42.80	22	44.40	24	46.40	26
3 x27	36.40	12	36.40	12	37.60	14	39.60	16	41.20	18	42.80	20	44.80	22	46.80	24	48.80	28
4 x27	59.60	14	59.60	16	61.20	18	63.60	20	65.60	22	68.00	26	70.80	30	73.20	32	76.00	34
4½x26	61.60	16	61.60	16	63.20	20	65.60	22	67.60	24	70.00	28	72.80	28	75.60	34	78.00	38

Ten in a minimum package, fifty in a standard package

BEHR-MANNING "METALITE"

For Production Sanders and Grinders, in Metal Grinding and Finishing Closekote; Heavy "X" Weight Backing



Aluminum oxide grain of a type made especially for rugged metal grinding and finishing; coated on heavy duty "X" weight cloth. A top grade hide glue is used as an adhesive with "Durabond" process.

This belt is a production tool and is recommended for all metal grinding and finishing.

Belt size, in.	Grit Nos.															
	100-X and Finer		80-X		60-X		50-X		40-X		36-X		30-X		24-X	
	Per 100	Wt. per 100, lbs.	Per 100	Wt. per 100, lbs.	Per 100	Wt. per 100, lbs.	Per 100	Wt. per 100, lbs.	Per 100	Wt. per 100, lbs.	Per 100	Wt. per 100, lbs.	Per 100	Wt. per 100, lbs.	Per 100	Wt. per 100, lbs.
2 x132	$ 89.54	44	$ 93.50	48	$ 99.58	62	$104.86	72	$110.93	80	$117.79	100	$124.66	115	$132.31	130
2½x60	61.20	22	63.60	24	66.80	28	70.00	32	73.20	36	77.20	42	81.20	44	84.80	52
3 x120	119.60	44	124.80	62	133.60	62	140.40	72	148.80	80	158.00	100	167.60	110	177.20	120
3 x132	128.80	48	134.80	50	144.40	70	152.00	80	160.80	100	171.20	110	181.60	120	192.00	130
3 x138	133.20	50	139.60	54	150.00	76	157.60	84	167.20	108	178.00	120	188.80	130	199.60	142
3 x148	141.20	52	148.00	60	158.80	80	167.20	96	177.20	100	188.80	...	200.80	...	212.00	...
3 x168	156.80	54	164.40	70	176.80	84	186.00	102	197.60	116	210.80	134	224.00	150	237.20	168
4 x52½	87.20	28	90.80	32	95.20	36	99.60	42	104.00	48	109.60	68	114.80	60	120.40	74
4 x118	157.00	60	164.00	70	175.00	80	185.00	90	195.00	116	207.00	120	219.00	130	232.00	110
4 x132	171.00	66	179.00	72	191.00	86	202.00	102	213.00	126	228.00	140	241.00	150	255.00	174
4 x138	177.00	70	186.00	76	198.00	90	210.00	110	222.00	120	236.00	148	251.00	158	265.00	168
4 x148	187.00	72	197.00	80	210.00	96	223.00	114	235.00	136	251.00	156	266.00	168	282.00	192
4 x168	208.00	82	219.00	92	234.00	110	248.00	124	262.00	150	280.00	174	298.00	192	315.00	222
6 x48$\frac{5}{16}$	125.00	40	130.00	45	135.00	50	142.50	60	147.50	65	155.00	80	162.50	90	170.00	105
8 x107	290.00	120	302.50	140	320.00	115	337.50	270	357.50	165	380.00	110	402.50	140	425.00	130
10 x70½	268.00	90	280.00	110	296.00	130	310.00	140	326.00	160	344.00	190	362.00	210	380.00	250

All widths, ten in a minimum package; 2, 3 and 4 in., fifty; 6 and 8 in., twenty; 10 in., ten in a standard unit package.

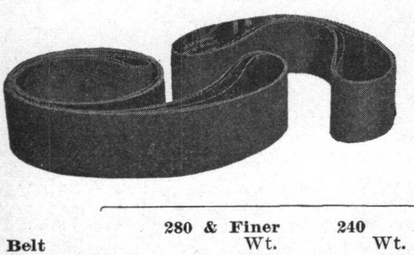
BEHR-MANNING "RESINALLMETALITE"

Closekote, Heavy "X" Weight Backing

Available in same sizes as standard "Metalite" belts above in grits 120 and coarser only at slightly higher prices.

Coated with the same abrasive as regular "Metalite" cloth belts. Instead of a hide glue bond, a double coated bond of synthetic resin is used. This plastic type bond is impervious to the heat generated in grinding and is recommended for backstands doing very severe grinding or snagging. Belt life generally is double that of ordinary belts.

BEHR-MANNING SPEEDWET "DURITE"



Waterproof; for Wet, Sanding of Glass, Plastics and Cast Iron

Designed and recommended for wet belt grinding and polishing of glass, cast iron and plastics where water is used as a lubricant. The abrasive is silicon carbide.

Grits available—600, 500, 400, 320, 280, 240, 220, 180, 150, 120, 100, 80, 60 and 50.

Belt size, in.	Grit Nos.																			
	280 & Finer		240		220		180		150		120		100		80		60		50	
	Per 100	Wt. per 100, lbs.	Per 100	Wt. per 100, lbs.	Per 100	Wt. per 100, lbs.	Per 100	Wt. per 100, lbs.	Per 100	Wt. per 100, lbs.	Per 100	Wt. per 100, lbs.	Per 100	Wt. per 100, lbs.	Per 100	Wt. per 100, lbs.	Per 100	Wt. per 100, lbs.	Per 100	Wt. per 100, lbs.
4x54	$164.00	26	$169.60	28	$174.00	28	$179.60	28	$186.00	32	$197.20	34	$210.00	36	$223.20	38	$237.60	42	$253.20	54
4x82	212.80	38	221.20	38	228.00	38	236.40	38	246.00	40	263.20	42	282.40	44	302.40	48	324.80	60	348.40	66
4x84	216.40	38	224.80	38	232.00	40	240.40	40	250.40	42	268.00	42	288.00	44	308.40	50	330.80	60	355.20	66
4x106	254.80	42	265.60	42	274.40	46	285.20	48	298.00	50	320.00	54	344.80	54	370.80	64	399.20	74	430.00	90
4x118	276.00	48	287.60	48	297.60	50	309.60	50	323.60	54	348.40	56	376.00	58	404.80	64	436.80	82	470.80	84
4x132	300.40	54	313.60	54	324.80	56	338.00	58	353.60	62	381.20	70	412.40	74	444.80	78	480.00	86	518.40	94
6x48$\frac{5}{16}$	232.00	38	240.00	38	246.00	38	254.00	38	262.00	40	277.00	42	295.00	44	312.00	46	332.00	60	354.00	70
8x107	510.00	90	532.00	95	550.00	100	572.00	105	598.00	105	640.00	105	693.00	110	744.00	115	803.00	145	865.00	155

All widths, ten in a minimum package; 4 in., fifty; 6 and 8 in., twenty in a standard unit package.

ABRASIVE CLOTH ROLLS

BEHR-MANNING "LIGHTNING METALITE" CLOTH HANDY ROLLS

LIGHTNING
METALITE CLOTH
HANDY ROLL
LIGHTNING
METALITE CLOTH

For Metal Finishing; Light Weight Cloth; 50 Yard Spools

"Metalite" cloth rolls are far superior to emery cloth and are recommended for all machine shop and production work using abrasive cloth in strips.

Aluminum oxide grain is electro-coated on strong but pliable cloth for better, more economical finishing and faster cutting. (Lightning always signifies electro-coating).

Grits available—500, 400, 320, 240, 180, 150, 120, 100, 80, 60, 50, 40, 36, 30, and 24.

	Grit, Nos.															
	100 & Finer		80		60		50		40		36		30		24	
Width, in.	Per roll	Wt. roll, lbs.	Per roll	Wt. roll, lbs.	Per roll	Wt. roll, lbs.	Per roll	Wt. roll, lbs.	Per roll	Wt. roll, lbs.	Per roll	Wt. roll, lbs.	Per roll	Wt. roll, lbs.	Per roll	Wt. roll, lbs.
½	$ 3.50	1.1	$ 3.70	1.5	$ 3.90	2	$ 4.10	2	$ 4.30	2	$ 4.50	2.5	$ 4.70	3	$ 4.90	3
¾	4.70	1.5	4.90	2	5.20	2.5	5.40	2.5	5.70	2.5	6.10	3	6.40	3.5	6.80	3.5
1	5.80	2	6.00	2.5	6.50	4	6.80	4.5	7.20	4.5	7.70	5	8.10	6	8.60	6
1½	8.10	3	8.40	3	9.00	6	9.60	7	10.20	7	10.90	7.5	11.50	9	12.20	9
2	10.30	4	10.80	5	11.60	8	12.30	9	13.10	9	14.00	10	14.90	12	15.90	12

½ and ¾ in., two rolls in a minimum package, twenty rolls in a unit package; 1, 1½ and 2 in., one roll in a minimum package, ten rolls in a standard unit package.

Note—Above available in widths up to 28 inches on special order.

ABRASIVE PAPER ROLLS

BEHR-MANNING GARNET

Openkote and Closekote, for Wood Sanding, "E" Weight Backing (130 lb. Test); 50 Yard Rolls

An old favorite with the wood working trade. A good all-purpose tool for use on drum sanders, or for making paper discs. Available in grits Nos. 3 to 3/0 in widths up to 48 in.

BEHR-MANNING "ADALOX"

Openkote and Closekote, for Wood Sanding, "E" Weight Backing (130 lb. Test); 50 Yard Rolls

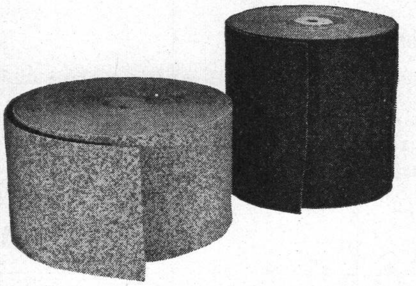
Electro-coated aluminum oxide grain. An extra tough, fast and long lasting production tool. Cost is 5% more than Garnet but it will outproduce Garnet by 50%. Recommended for all production wood sanding.

	Grit, Nos.																	
	100 (2/0) & Finer		80 (0)		60 (½)		50 (1)		40 (1½)		36 (2)		30 (2½)		24 (3)		20 (3½)	
Width, in.	Per roll	Wt. roll, lbs.	Per roll	Wt. roll, lbs.	Per roll	Wt. roll, lbs.	Per roll	Wt. roll, lbs.	Per roll	Wt. roll. lbs.	Per roll	Wt. roll, lbs.	Per roll	Wt. roll, lbs.	Per roll	Wt. roll, lbs.	Per roll	Wt. roll, lbs.
½	$ 1.34	1	$ 1.44	1.5	$ 1.60	2	$ 1.76	1.5	$ 1.94	2	$ 2.12	2	$ 2.30	2.5	$ 2.50	3	$ 2.70	3
1	2.30	1.5	2.50	2	2.80	3	3.10	2	3.50	4	3.80	4	4.20	5	4.60	6	5.00	6
1½	3.20	2.5	3.50	3	4.00	5	4.50	3.5	5.00	6	5.60	7	6.10	8	6.70	8	7.30	9
2	4.20	3	4.60	3.5	5.20	6	5.90	5	6.60	8	7.30	9	8.00	10	8.80	12	9.60	12
2½	5.10	3.5	5.60	5	6.40	8	7.20	6	8.10	9	9.00	10	9.90	12	10.90	14	11.90	15
3	6.10	4	6.70	6	7.60	10	8.60	8	9.70	10	10.80	11	11.90	13	13.00	16	14.20	18
3½	7.00	5	7.70	7	8.80	11	10.00	9	11.20	12	12.50	13	13.80	15	15.10	18	16.50	21
4	8.00	6	8.80	8	10.00	9	11.30	10	12.80	13	14.20	18	15.70	17	17.20	24	18.80	24
5	9.90	7	10.80	9	12.40	13	14.10	12	15.80	18	17.70	20	19.50	22	21.40	28	23.40	30
6	11.80	9	12.90	11	14.80	14	16.80	16	18.90	20	21.10	22	23.30	26	25.60	29	28.00	36
7	13.70	10	15.00	14	17.20	18	19.50	17	22.00	24	24.60	26	27.10	34	29.70	35	32.60	42
8	15.60	12	17.10	15	19.70	19	22.30	22	25.10	26	28.10	22	31.00	36	33.90	38	37.20	48
9	17.50	13	19.20	17	22.10	22	25.00	22	28.20	30	31.50	38	34.80	39	38.10	44	41.80	56
10	19.40	16	21.30	18	24.50	26	27.70	24	31.30	36	35.00	40	38.60	44	42.30	54	46.40	62
12	23.20	18	25.40	22	29.30	28	33.20	32	37.40	39	41.90	45	46.20	56	50.70	58	55.60	72
14	26.90	21	29.60	24	34.10	35	38.70	34	43.60	48	48.80	52	53.90	68	59.10	70	64.80	84
15	28.80	23.5	31.70	27	36.50	39	41.40	36	46.70	51	52.30	58	57.70	70	63.30	74	69.50	90
16	30.70	28.5	33.80	28	38.90	41	44.10	44	49.80	52	55.70	64	61.50	72	67.50	76	74.10	96
18	34.50	27	38.00	34	43.70	45	49.60	48	56.00	60	62.60	76	69.20	78	75.80	88	83.30	108
20	38.30	30	42.20	37	48.60	52	55.10	49	62.20	72	69.60	80	76.80	86	84.20	92	92.50	120
24	41.00	36	45.40	45	52.60	56	60.00	67	68.00	79	76.40	90	84.60	102	93.00	115	102.40	140
26	46.80	37.5	51.60	48.5	59.40	58	67.40	72	76.00	87	85.10	97	94.00	110	103.10	127	113.30	152
27	48.50	39	53.50	51	61.60	69	69.90	75	78.90	90	88.30	101	97.60	115	107.00	131	117.60	158
30	51.20	47	56.70	54	65.70	71	75.00	81	85.00	96	95.50	110	105.70	134	116.20	141	128.00	176
31	55.40	48.5	61.00	56	70.40	74	79.90	84	90.20	101	101.10	117	111.70	136	122.60	147	134.70	182
36	61.50	57	68.10	68	78.90	84	90.00	98	102.00	121	114.60	146	126.90	160	139.50	178	153.60	216
40	68.30	61	75.70	73	87.70	92	100.00	106	113.40	129	127.40	149	141.00	172	155.00	196	170.70	240
42	71.70	63	79.40	83	92.00	96	105.00	117	119.00	130	133.70	160	148.00	182	162.80	201	179.20	252
44	77.60	67	85.60	86	98.80	101	112.40	116	127.00	132	142.40	170	157.70	192	172.90	214	190.10	264
48	82.00	76	90.80	89	105.20	110	120.00	130	136.00	154	152.80	183	169.20	216	186.00	240	204.80	284

All widths, one roll in a minimum package; ½ in., twenty; 1, 2½ in., ten; 3, 3½ in., eight; 4, 5 in., six; 6, 7 in., four; 8, 9 in., three; 10, 15 in., two; 16 in. and wider, one roll in a standard unit package.

ABRASIVE ROLLS

BEHR-MANNING RESINIZED SPEEDGRITS PAPER AND COMBINATION BACKING



For Floor Sanding, 50 Yard Rolls

A special silicon-carbide grain resin bonded to a very strong back. Will not chip or break and is recommended for economical floor sanding of all types. Production is very often double that of abrasives of similar manufacture.

Paper Backing—Supplied automatically in grits 2/0 (100) through 3 (24), in closekote only. For sanding and finishing of new floors and also old floors after varnish is removed.

Combination—A backing of paper and cloth combined for extra strength. Supplied automatically in grits 3½ (20), 4 (16) and 4½ (12). For removing old finish.

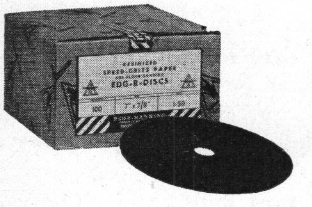
	Paper Grit Nos.																Combination Grit Nos.					
	2/0 (100)		0 (80)		1/2 (60)		1 (50)		1½ (40)		2 (36)		2½ (30)		3 (24)		3½ (20)		4 (16)		4½ (12)	
Width, in.	Per roll	Wt. roll, lbs.	Per roll	Wt. roll, lbs.	Per roll	Wt. roll, lbs.	Per roll	Wt. roll, lbs.	Per roll	Wt. roll, lbs.	Per roll	Wt. roll, lbs.	Per roll	Wt. roll, lbs.	Per roll	Wt. roll, lbs.	Per roll	Wt. roll, lbs.	Per roll	Wt. roll, lbs.	Per roll	Wt. roll, lbs.
6	$11.80	10	$12.90	11	$14.80	14	$16.80	16	$18.90	21	$21.10	23	$23.30	27	$25.60	29	$22.70	23	$22.70	29	$25.80	35
7	13.70	12	15.00	14	17.20	17	19.50	20	22.00	23	24.60	28	27.10	32	29.70	36	27.80	36	27.80	35	30.10	42
8	15.60	13	17.10	15	19.70	19	22.30	23	25.10	27	28.10	31	31.00	35	33.90	40	30.30	32	30.30	35	34.00	46
9	17.50	15	19.20	18	22.10	22	25.00	26	28.20	30	31.50	35	34.80	40	38.10	43	34.00	35	34.00	42	38.60	55
10	19.40	16	21.30	20	24.50	24	27.70	28	31.30	32	35.00	39	38.60	46	42.30	49	38.00	36	38.00	47	45.10	55
12	23.20	19	25.40	23	29.30	27	33.20	34	37.40	40	41.90	45	46.20	53	50.70	57	45.40	46	45.40	51	51.60	68
15	28.80	23	31.70	29	36.50	34	41.40	41	46.70	50	52.30	56	57.70	68	63.30	67	56.70	56	56.70	69	64.40	73
16	30.70	26	33.80	30	38.90	38	44.10	46	49.80	54	55.70	62	61.50	70	67.50	80	60.60	64	60.60	70	68.00	92
18	34.50	30	38.00	36	43.70	44	49.60	52	56.00	60	62.60	70	69.20	80	75.80	86	68.00	70	68.00	96	77.20	110

All widths one roll in a unit package; 6-7 in., four; 8-9 in., three; 10-15 in., two; 16-18 in., one roll in a standard unit package.

ABRASIVE DISCS

BEHR-MANNING RESINIZED SPEED GRITS

Paper and Combination "Edg-R" Discs, For Floor Sanding and Miscellaneous Use



Fits the standard disc machines which are used for sanding right up to the baseboard, in closets on stair treads and in other hard-to-get-at places.

Paper Backing—Supplied automatically in grits 2/0 (100) through 3 (24), in closekote only.

Combination—A backing of paper and cloth combined for extra strength. Supplied automatically in grits 3½ (20), 4 (16) and 4½ (12).

	Diameter, in.					
	5		6		7	
Grit Nos.	Per 100	Wt. per 100, lbs.	Per 100	Wt. per 100, lbs.	Per 100	Wt. per 100, lbs.
Paper Backing						
2/0 (100)	$ 3.60	2	$ 4.90	3	$ 7.30	4
0 (80)	3.90	2.2	5.30	4	7.90	4
½ (60)	4.30	2.4	5.90	4	8.80	5
1 (50)	4.80	3	6.60	5	9.70	6
1½ (40)	5.30	4	7.30	6	10.70	8
2 (36)	5.90	4.3	8.10	6	11.70	9
2½ (30)	6.40	5	8.90	7	12.80	10
3 (24)	6.90	5.2	9.60	8	13.80	10
Combination Backing						
3½ (20)	$12.20	6	$17.20	8.6	$24.10	11
4 (16)	12.80	6.5	18.10	9	25.40	11.6
4½ (12)	13.50	6.8	19.00	9.5	26.60	12

Paper discs, 100 in a minimum package; 500 in a standard unit package. Combination discs, 50 in a minmium package, 250 in a standard unit package.

SPEED-WET
METALITE
DURABONDED
GRIT NO. 36
TRADE MARKS REG. U.S. PAT. OFF.
BEHR-MANNING
TROY, N.Y. Made in U.S.A.
NORTON ABRASIVES
7N3

BEHR-MANNING SPEEDWET "METALITE"

Flat Type, Fibre Backed Closekote; For Metal

Aluminum oxide (alundum) grain all fibre backing, all resin bonded. For wet or dry finishing.

Center hole size has no bearing on price. ½ and ⅞ in. holes fit most sanders.

	Diameter, in.			
	7		9⅛	
Grit Nos.	Per 100	Wt. per 100, lbs.	Per 100	Wt. per 100, lbs.
80 & Finer	$52.50	12	$ 70.00	19
60	55.70	13	74.40	21
50	58.70	13	78.10	23
36	62.80	16	83.60	26
30	63.50	17	84.70	23
24	64.10	19	85.50	32
16	82.50	25	110.00	42

25 in a minimum package; 100 in a standard unit package.

ABRASIVE DISCS

BEHR-MANNING "METALITE"

Flat Type, Fibre Backed, Openkote

For paint removal, etc.; for dry use only.

Available in same sizes, grits and prices as Speedwet "Metalite" fibre discs. Only 50% of surface covered with grain. Will not load up on paint or other soft materials.

BEHR-MANNING "ADALOX," PAPER BACKED

For Skilsaw No. 517 Sander and Polisher

Aluminum oxide grain coated on "E" weight (130 pounds) paper. For general wood and metals grinding and finishing. For more severe operations a fibre-backed disc is recommended.

6 in. diameter, ⅜ in. hole.

Grit Nos.	100	80	60	50	40	30
Wt. per 100, lbs.	2.5	3	4	4.5	6	8
Per 100	$4.90	5.30	5.90	6.60	7.30	8.90

100 in a minimum package; 500 in a standard unit package.

BEHR-MANNING SPECIAL DISCS

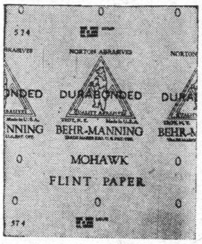
Cloth and Paper-Backed, for Special Application

Ready cut discs in a wide range of sizes up to 28 in. diameter and in all grits, for use on stationary grinders. "Adalox" and garnet in paper or cloth-backed. "Metalite" in cloth only.

Prices on Request

ABRASIVE PAPER

"MOHAWK" FLINT OR SAND PAPER



9x10 in. Sheets

Highest grade natural quartz flint, bonded to strong but flexible paper backing. Commonly referred to as "sand" paper.

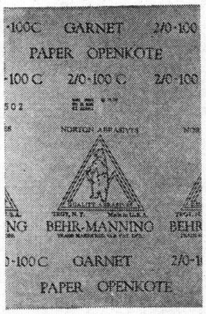
For miscellaneous hand sanding. Not recommended for production work.

Grit Nos.	Per 100 sheets	Wt. per 100 sheets, lbs.	Grit Nos.	Per 100 sheets	Wt. per 100 sheets, lbs.
4/0	$2.80	2.5	**1**	$3.30	6
3/0	2.80	3	**1½**	3.80	7
2/0	2.80	3.5	**2**	4.30	9
0	2.80	3.8	**2½**	4.80	11.5
½	3.00	4.6	**3**	5.50	13

2/0 and finer, 100 sheets in a minimum package; 1000 in a standard unit package; 0 & coarser, 50 sheets in a minimum package; 500 in a standard unit package.

ABRASIVE PAPER AND CLOTH SHEETS

BEHR-MANNING GARNET CABINET PAPER



9x11 in. Sheets

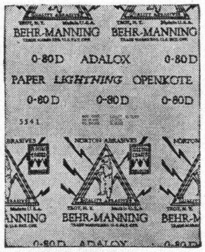
For hand sanding on wood. Far superior to flint paper for all finishing work.

High quality Adirondack natural garnet grain coated on strong pliable paper. Popular with cabinet makers for many years.

Grit Nos.	Per 100 sheets	Wt. per 100 sheets. lbs.
150 (4/0)	$ 9.30	4.5
120 (3/0)	9.30	5
100 (2/0)	9.30	5.8
80 (0)	10.40	8
60 (½)	12.00	10
50 (1)	13.70	12
40 (1½)	15.60	14
36 (2)	17.50	16
30 (2½)	19.30	22
24 (3)	21.30	27
30 (3½)	23.40	30

100(2/0) and finer, 100 sheets in a minimum package, 1000 in a standard unit package. 80(0) and coarser, 50 sheets in a minimum package, 500 in a standard unit package.

BEHR-MANNING "LIGHTNING ADALOX" PAPER



9x11 in. Sheets

Aluminum oxide grain electrocoated on highest grade paper backing. For hand or machine sanding on wood or metal.

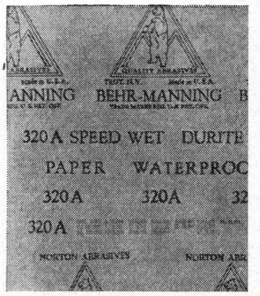
Individual grains are **harder and tougher than garnet** and possess cutting points and edges that stay sharp even under extremely hard usage.

"A" light weight backing available in openkote only; "C" medium and "D" heavy weights available in openkote or closekote.

Grit Nos.	Per 100 sheets	Backing	Wt. per 100 sheets, lbs.
320 (9/0)	$ 9.30	A	3
280 (8/0)	9.30	A	3
240 (7/0)	9.30	A	3
220 (6/0)	9.30	A	3
180 (5/0)	9.30	A	3
150 (4/0)	9.30	A,C	3.5
120 (3/0)	9.30	A,C	5
100 (2/0)	9.30	A,C	6
80 (0)	10.40	A,D	8
60 (½)	12.00	D	10
50 (1)	13.70	D	12
40 (1½)	15.60	D	16
36 (2)	17.50	D	17

100(2/0) and finer, 100 sheets in a minimum package, 1000 in a standard unit package. 80(0) and coarser, 50 sheets in a minimum package, 500 in a standard unit package.

BEHR-MANNING "SPEEDWET DURITE" PAPER



Waterproof, 9x11 in. Sheets

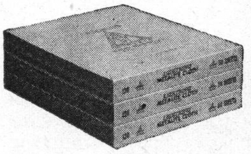
A waterproof sandpaper with a full coating of sharp, fast-cutting silicon carbide grain that is non-scratching. Because of its extreme pliability, fine finishing properties, slowness in loading and economy in use, it has been accepted as standard for fine water sanding operations.

Used especially for wet sanding undercoats, enamels, varnish, etc.

Grit Nos.	Per 100 sheets	Backing	Wt. per 100 sheets, lbs.
600	$12.50	A	2.5
500	12.50	A	2.5
400	12.50	A, C	3 (A),4 (C)
360	12.50	A, C	3 (A),4 (C)
320	12.50	A, C	3.5(A),4 (C)
280	12.50	A, C	3.5(A),4.5(C)
240	12.50	A, C	4 (A),5 (C)
220	12.50	A, C	4 (A),5 (C)
180	12.50	C	6
150	13.30	C	6.5
120	14.10	D	8
100	16.40	D	8.5
80	18.70	D	10
60	21.80	D	11.5

50 sheets in a minimum package, 500 in a standard unit package.

BEHR-MANNING "LIGHTNING METALITE" CLOTH



9x11 in. Sheets

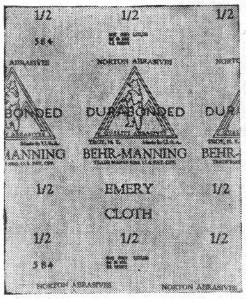
Flexible aluminum oxide cloth for hand or machine use on all metals.

Every grain is stood pointed end up and evenly spaced by an electrical field of 46,000 volts. Far superior to emery cloth.

Grit Nos.	Per 100 sheets	Wt. per 100 sheets, lbs.
500	$22.70	5
400	22.70	5
320	22.70	6
240	22.70	6
180	22.70	7
150	22.70	8
120	22.70	8.5
100	22.70	10
80	24.20	11
60	26.20	13
50	28.10	16
40	30.20	19
36	32.60	23
30	35.00	26
24	37.50	28

40 and finer, 50 sheets in a minimum package, 500 in a standard unit package; 36 and coarser 25 sheets in a minimum package, 250 in a standard unit package.

BEHR-MANNING EMERY AND CROCUS CLOTH



9x11 in. Sheets

The machinists' standard for smoothing and polishing metal where no great amount of stock is to be removed.

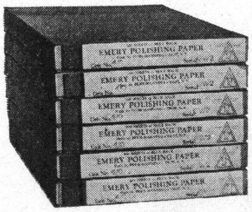
Crocus cloth is very fine.

Sturdy sleeves protect the sheets and keep them flat.

Grit Nos.	Per 100 sheets	Wt. per 100 sheets, lbs.
3/0	$12.50	7
2/0	12.50	8
0	12.50	8
½	13.00	9
1	13.60	11
1½	14.20	12
2	15.20	15
2½	16.40	16
3	17.70	21
Crocus	12.50	6

1½ and finer, 50 sheets in a minimum package, 500 in a standard unit package; 2 and coarser, 25 sheets in a minimum package, 250 sheets in a standard package.

BEHR-MANNING EMERY POLISHING PAPER



9x13¾ in. Sheets

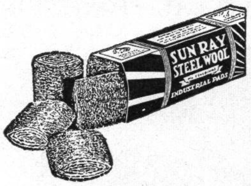
Used in laboratories and in industrial plants for polishing out samples of metal or minerals. Also used by jewelers for polishing.

Grit Nos.	Per 100 sheets	Wt. per 100 sheets, lbs.
4/0	$12.00	3.5
3/0	12.00	3.8
2/0	12.00	4
0	12.00	4
1	12.00	4.4
1½	12.00	4.6
2	12.00	5
3	12.00	5.6

2/0 and finer, 100 sheets in a minimum package, 1000 sheets in a standard unit package; 0 and coarser, 50 sheets in a minimum package, 500 in a standard unit package.

STEEL WOOL

SUN-RAY LAYER-BUILT PADS



Big, cushiony pads, handy to work with and exceptionally economical. They work perfectly on curves and uneven surfaces. Give uniformly excellent results in cleaning, smoothing and polishing wood, metal, stone, pottery, etc.

16 pads in a cardboard package.

Nos.	**4/0**	**3/0**	**2/0**	**0**
Per package	$1.00	.90	.65	.55
Nos.		**1**	**2**	**3**
Per package		$0.55	.50	.50

Weight per case 24 pounds.
Twenty-four packages in a case.

SHARPENING STONES

CRYSTOLON

NORTON ABRASIVES
CRYSTOLON
OILSTONE

Silicon Carbide, Medium Grit

Excellent for sharpening tools with broad, flat edges.

Oil saturated at the factory. Designed for use either dry or with additional moderate applications of oil.

Each

No. MJB6—6x2x1 in.; wt. per standard package 7¼ lbs. $3.00

One in a box, six in a standard package,

CRYSTOLON COMBINATION

NORTON ABRASIVES
CRYSTOLON
OILSTONE

One Side Coarse, Other Side Fine Grit

Oil saturated at the factory; coarse side is for dull tools and fine side for a finished edge.

Nos.	JB6	JB7
Size, in.	6x2x1	7x2x1
Wt. std. pkg., lbs.	7¼	8½
Each	$3.20	3.50

One in a box, six in a standard package.

INDIA COMBINATION

NORTON ABRASIVES
INDIA

One Side Coarse, Other Side Fine Grit

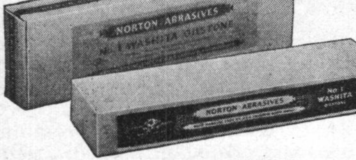
Aluminum oxide (alundum) abrasive.

Two stones vitrified into one solid stone. The coarse side restores dull edge rapidly or takes out nicks. The fine side gives an extra keen edge.

Nos.	IB6	IB7	IB8
Wt. std. pkg., lbs.	7¼	8½	10
Size, in.	6x2x1	7x2x1	8x2x1
Each	$3.20	3.50	3.80

One in a box, six in a standard package.

WASHITA NATURAL STONE



White; Medium Grit

Preferred by many artisans for efficient tool sharpening. Provides smooth, long-lasting edges.

Each

No. NB6—6x2x¾-1; wt. per standard package 6 lbs. $2.90

One in a box, six in a standard package.

SHARPENING STONES

CRYSTOLON POCKET

NORTON ABRASIVES
HARD ARKANSAS

For Coarse or Fine Edging on Pocket Knives and Small Tools

Made of silicon carbide abrasive in just the right selection of grit and bond. Produces an extra fine edge.

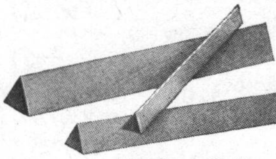
Unsurpassed for pocket and pen knives, ink scratchers and small edge tools.

Per dozen

No. JP-13—3x⅞x⅜ in.; wt. per dozen 1¾ lbs. $6.00

One in a box, one dozen on a counter display card.

INDIA TRIANGULAR FILES



Medium Grit

Made from aluminum oxide; factory impregnated with oil and ready for use with slight further applications.

Superior to metal files on die and tool work. Used for cleaning corners of dies where some stock is to be removed without scratching.

Nos.	MF114	MF144
Size, in.	4x¼	4x½
Wt. std. pkg., lbs.	$\frac{3}{16}$	$\frac{9}{16}$
Each	$1.20	1.30

Twelve in a standard package.

AXE STONES

CRYSTOLON ROUND

NORTON ABRASIVES
CRYSTOLON
AXE STONE
ROUND COMBINATION
CRYSTOLON AXE STONE
ROUND COMBINATION

Combination Grit

Made of silicon carbide abrasive, coarse grit on one side for rapid cutting and fine grit on the other for a keen, finished edge. Rounded edges.

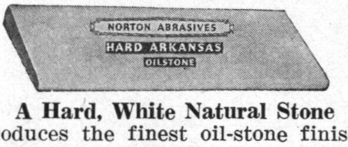
Each

No. JT3—3 in. diam., ⅝ in. thick; wt. per carton 2½ lbs. $1.50

One in a box, six in a display carton.

ROUND EDGE SLIPS

HARD ARKANSAS



A Hard, White Natural Stone

Produces the finest oil-stone finish on curved edges and surfaces.

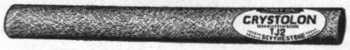
Each

No. HS14 — 4x1¼-1½x¼-⅜x⅛-sharp; wt. per standard package 9 oz. $3.50

Three in a standard package.

SCYTHE STONES

CRYSTOLON



Silicon Carbide Abrasive

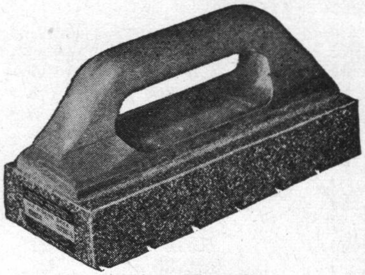
A rapid cutting stone; produces a sharp edge with little effort.

Nos.	TJ2	TJ3
Size, in.	10x1x⅝	10x1¼x¾
Wt. dozen, lbs.	5⅔	8⅔
Per dozen	$9.60	10.80

One dozen in a display box.

RUBBING BRICKS

CRYSTOLON



With Handle

Fluted type for concrete workers. The securely fastened handle reduces labor and increases production.

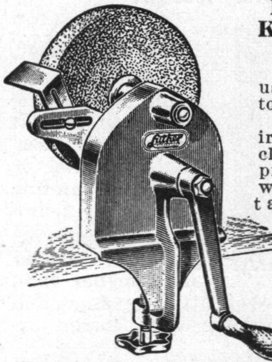
Each

No. 235—8x3½x1½ in.; wt. each 3⅝ lbs. $6.00

One in a standard package.

TOOL GRINDERS

MILWAUKEE



For Sharpening Knives and Small Tools

Quality wheel for use on fine edge tools.

One-piece grey iron gear case, enclosed and dust-proof, flanged inwardly for oil retaining; heavy bearings; spur cut gears. Rustproofed adjustable work rest.

Crank fastened with slip-proof mounting.

Steel bench screw with sturdy notched iron hand grip; permits use anywhere.

Durable and attractive orange red finish.

New design and construction bring the gear case entirely over the bench, giving a more solid mounting and with a minimum of vibration.

Nos.	M4	M5	M6
Wheel, in.	4x1x$\frac{5}{16}$	5x1x⅜	6x1x⅜
Wt. each, lbs.	5	7	9¾
Each	$6.00	7.20	8.90

One in a box.

PRUSSIAN BLUE

PERMATEX NON-DRYING

PERMATEX
PRUSSIAN BLUE

Used by mechanics for locating "high-spots" when adjusting bearings and shafts. Prevents burnt bearings., knocking or jammed shafting. Will not dry if left on a bearing.

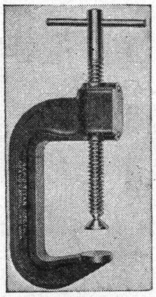
Per tube

¾x4 in. Tube—Wt. per case 4 lbs. $0.25

Twelve tubes in a carton; three cartons in a case.

"C" CLAMPS

RAPID-TITAN



With Instant Adjusting Threaded Cam Wedge

For production economy in automotive, furniture, boat building, electrical, aviation, welding and machining operations

How It Operates

Only one-quarter turn clockwise needed to wedge cam against housing, engaging the threads, thereby obtaining conventional screw action to apply pressure to the work. To open the clamp and free the work, a quarter-turn counter clockwise releases pressure and disengages the threads. The screw may then be slipped through the cam nut to fully open the clamp for instant release of the work.

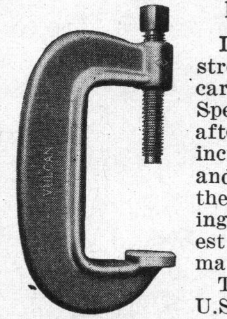
Constructed with a heavy malleable frame and a steel screw; spatter-proof finish for welding operations or where protection from rust is required.

Nos.	Each	Opening, in.	Depth, in.	Wt. ea., lbs.
CB2	$2.25	2	1¾	1
CB4	3.25	4	2⅜	3
CD6	3.50	6	3	4
CB8	4.95	8	3⅜	7
CB10	5.50	10	3¾	8
CB12	6.50	12	4	10

Open stock.

WILLIAMS "VULCAN" HEAVY SERVICE

Drop Forged Steel



Drop-forged from a strong, tough grade of carefully selected steel. Specially heat treated after forging to further increase their stiffness and strength and reduce the liability of springing, they are the strongest "C" clamp on the market.

The screws, threaded U.S. standard, are made of a special grade of steel and are hardened and tempered.

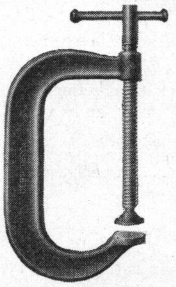
Unless otherwise specified, clamps with standard screws will be furnished.

Nos.	4	5	6
Capacity, in., max.	4½	5½	6½
Capacity, in., min.	2	2½	3$\frac{1}{16}$
Depth of throat from center of screw, in.	2¾	3⅛	3⅜
Length body, in.	8⅞	10⅜	12
Width body, in.	6½	7	7⅞
Standard screw, in.			
Diam.	⅞	⅞	1
Lgth. under head	4½	5⅜	1
Wt. each, lbs.	9.7	12.3	16.5
Each	$11.02	13.55	16.94

Open stock.

"C" CLAMPS

WILLIAMS LIGHT DUTY



Drop Forged Steel, Deep Throat

Especially designed for use where the clearance provided by a deep throat is required. As in body building, welding, wood working, etc.

Drop forged from an unusually strong special steel and heat treated for maximum strength, they combine dependable strength with minimum weight.

The screws, fitted with adjustable handle, are made from tough wrought steel, heat treated and threaded especially for strength and rapid adjustment. Wrought steel swivel.

Nos.	402	403	404	406
Capacity, in.	2	3	4	6
Depth, in.	2	2⅜	2¾	3⅝
Lgth. body, in.	4⅞	6⅛	7⅝	10¼
Width body, in.	3¾	4⅛	4¾	6
Diam. screw, in.	½	½	⅝	⅝
Length screw, in.	4¾	6	8⅛	10¼
Wt. each, lbs.	1⅛	1½	2¼	3¾
Each	$2.55	3.06	3.72	5.08

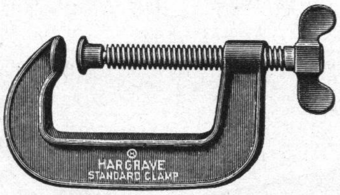
Nos.	408	410	412
Capacity, in.	8	10	12
Depth, in.	4½	5⅜	5¾
Length body, in.	12¾	15¼	18
Width body, in.	7	8⅛	9⅜
Diam. screw, in.	¾	¾	⅞
Length screw, in.	10⅝	11¾	13
Wt. each, lbs.	5½	8¼	12½
Each	$6.78	8.47	11.02

Minimum capacity of No. 408 is 2 in., No. 410 is 3 in., No. 412 is 4 in.

Open stock.

CARRIAGE CLAMPS

HARGRAVE STANDARD



No. 540—With Oscillating Tip

Frame of 3 to 8 in. sizes is made by a special process which gives it far greater strength than even the best grades of malleable. 10 and 12 in. frames are of high grade malleable iron.

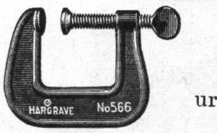
Heat treated screw with Acme threads, wing is forged integral. Steel tip put on to stay.

Opens, in.	Per dozen	Depth, in.	Wt. per dozen, lbs.
4	$18.20	2$\frac{1}{16}$	22
5	22.70	2½	27½
6	27.30	2¾	33½
8	41.60	3¼	50
10	53.40	3⅜	80
12	69.60	3⅝	96

3 to 6 in., one-half dozen; 8 in. one dozen; 10 and 12 in., one-half dozen in a box.

SMALL "C" CLAMPS

HARGRAVE



Strong Malleable Frame, Steel Screw

Steel button tip. Natural finish.

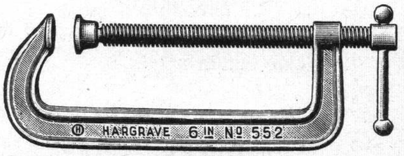
Nos. 566 and 568 have flat wing handle; No 572 has sliding pin handle.

Used in aircraft and many other industrial plants.

Nos.	566	572	568
Opening, in.	1¼	2½	2½
Depth, in.	1¼	½	2½
Dozen in a box	½	½	⅙
Wt. dozen, lbs.	2½	8	9½
Per dozen	$5.40	5.80	10.00

JUNIOR CLAMPS

HARGRAVE



Strong Malleable Frame; Steel Screw

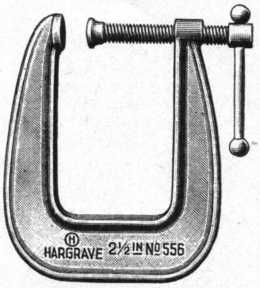
For model and pattern making and other light clamping operations.

Frame finished in bright red enamel.

Per dozen

No. 552—6 in. opening, 1⅞ in. deep; wt. per dozen 16 lbs. ...$19.00

One-half dozen in a box.



Strong Malleable Frame, Steel Screw

For model and pattern making and other light clamping operations.

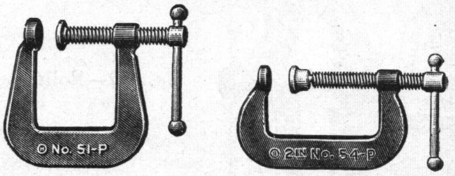
Frame finished in bright red enamel.

Per dozen

No. 556—2½ in. opening, 4½ in. deep; wt. per dozen 16 lbs. $16.00

One-half dozen in a box.

HARGRAVE SUPER-JUNIOR



Forged Steel, Heat Treated, Sliding Pin

Forged from stiff grade steel, gun metal finished frame; nickel plated screws.

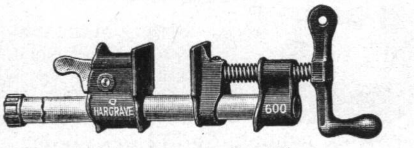
These clamps are much stronger than malleable and other case clamps and are more economical to use on practically all classes of work.

Especially suitable for jig and pattern **work, gluing, welding and aircraft construction. Eliminates the loss of valuable shop time due to small clamp failure.**

Nos.	Per dozen	Opening, in.	Depth, in.	Doz. in. box	Wt. doz., lbs.
51	$4.90	1	1½	1	2¼
52	5.10	1¼	1¼	1	2½
53	5.50	1½	1½	1	3½
54	6.70	2	1¼	½	4
55	8.70	3	1⅜	1½	6½

CLAMP FIXTURES

HARGRAVE



For Use on ¾ in. Pipe

Malleable iron frame, slide, tip and crank. Steel screw has "Acme" thread which insures long life.

Frame threaded to fit standard pipe thread. Hardened steel insert in tip takes end thrust of screw. Hardened steel cam with milled teeth locks slide. Slide will not slip, yet releases instantly.

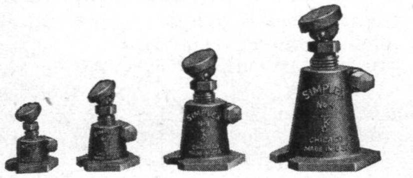
A set of fixtures consists of parts complete to make **one clamp** (frame, screw, handle, tip and slide) without pipe.

	Per dozen sets
No. 600—Fixtures only, ⅝ in. diam. screw, 1¾x1¾ in. clamping surface; wt. per dozen sets 27 lbs.	$40.00

One set in a box.

PLANER JACKS

SIMPLEX



Save time and cut costs by leveling work on the bed of planers, milling machines and other machine tools.

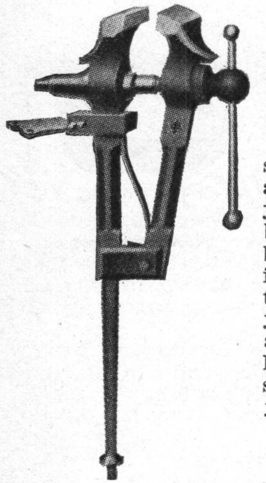
The side lock nut holds leveling screw at desired height. Base is notched for fastening to the bed. Ball and socket cap for easy leveling.

Nos.	Each	Sustaining cap., tons	Height, in.	Lift, in.	Wt. each, lbs.
1	$1.90	2	2¾	1	1½
2	3.00	4	3¾	1½	3
3	4.50	6	5¼	2¼	6
4	8.65	8	7½	4½	12

Open stock.

BLACKSMITHS' VISES

IRON CITY



No. 417—Solid Box

Japanned forged steel body, jaws and hinge plate; japanned malleable iron box and bench plate; polished, tempered tool steel inserted jaws; steel screw and sliding lever handle; steel spring between jaws.

Size, Nos.	Each	Width jaws, in.	Wt. each, lbs.
70	$39.15	5	70
100	63.45	6	100

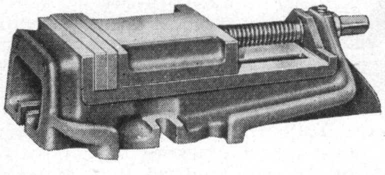
Open stock.

MILLING MACHINE VISES

KEARNEY & TRECKER "MILWAUKEE"

Made of high strength semi-steel with jaws of alloy steel, heat treated and ground to maintain the accuracy machined into supporting members. Sliding member fits accurately on the base and is properly gibbed to hold it against the base.

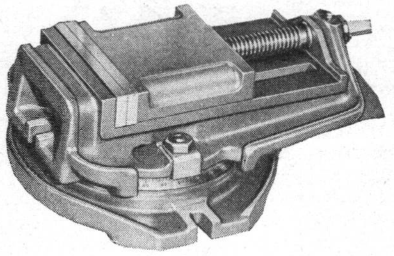
5, 6 and 7 in. sizes have coolant trough. Complete with crank and two clamping iron bolts with nuts and washers. Fit all standard milling machine tables.



Plain

Height kept to a minimum to bring the workpiece as close to the top of the milling machine table as possible.

Size, in.	Each	Jaws open, in.	Width jaws, in.	Depth jaws, in.	Wt. each, lbs.
6	$ 70.00	4	6⅜	1½	65
7	91.00	5	7⅜	2	111
8	113.00	6	8⅜	2½	130
9	145.00	7	9⅜	2¾	217



Swivel

The circular base is accurately graduated through its plane of 360°.

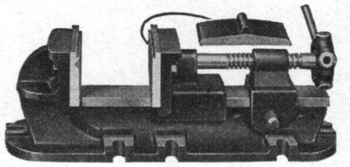
Vise can be removed from the swivel base and used as a plain vise if desired.

Size, in.	Each	Jaws open, in.	Width jaws, in.	Depth jaws, in.	Wt. each, lbs.
6	$ 91.00	4	6⅜	1½	92
7	118.00	5	7⅜	2	149
8	140.00	6	8⅜	2¼	165
9	177.00	7	9⅜	2¾	275

Open stock.

DRILL PRESS VISES

GEM



Heavily Constructed of Strong Semi-Steel

Large square thread screw operates in malleable nut.

Extra deep tool steel jaws, hardened and ground. "V" grooves for round work, built-in parallel grooves for flat stock, etc.

Jaws reversible to give plain surface.

5-point hand-wheel for quick adjustment without cumbersome wrench.

Loose swivel jaw for positive holding of tapered and cold-shaped work.

You'll find them "just the thing" to handle the unusual jobs quickly and well. Often used on milling machines, grinders, shapers and many other machines.

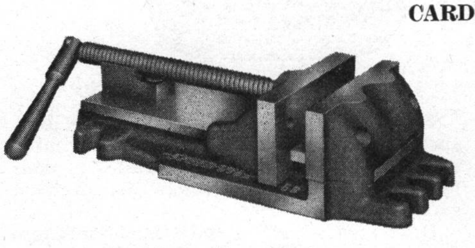
Base has eight slot holes for bolting to bench.

Nos.	1	2	3
Width jaws, in.	3½	5½	8½
Depth jaws, in.	2	3	4
Jaws open, in.	3½	6½	10½
Over all, in.—			
Length	12	18	26
Width	4½	6	9
Height	4	6	8
Wt. each, lbs.	18	53	132
Each	$35.00	51.00	99.00

Open stock.

SPEED VISES

CARDINAL



Lift—Slide—Lock

Opens or closes instantly with screw lifted out of nut. Because of undercut thread screw and nut lock or release with half turn.

Screw and nut hardened steel for long life. Heavy semi-steel castings for strength. Heavy steel base for rigidity.

Without Jaw Plates

Nos.	**3-B**	**4-B**	**6-B**
Width jaws, in.	3	4	6
Depth jaws, in.	1½	1½	2
Max. opening, in.	3	4	6
Height, in.	$2\frac{9}{16}$	2⅞	$3\frac{11}{16}$
Length, in.	$8\frac{15}{16}$	11½	15
Wt. each, lbs.	7	12½	31
Each	$8.00	10.50	16.40

Combination Jaw Plates

For Nos.	**3-B**	**4-B**	**6-B**
Per pair	$3.50	4.25	6.25

Parts—Prices Each

Nut	$1.75	1.75	2.25
Screw and handle	2.25	2.50	3.50
Base	2.00	3.00	5.25
Base plate	1.00	1.75	2.75
Sliding jaw	1.75	2.25	3.50
Fixed jaw	1.75	2.25	3.50

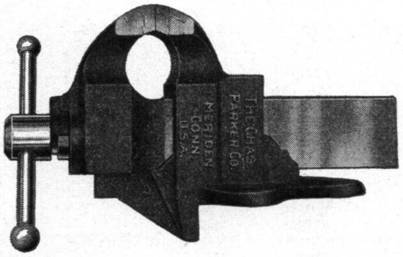
Open stock.

MACHINISTS' VISES

PARKER "ECLIPSE"

Parker metal castings; renewable tool steel jaws are pinned on and cover the entire top of the vise.

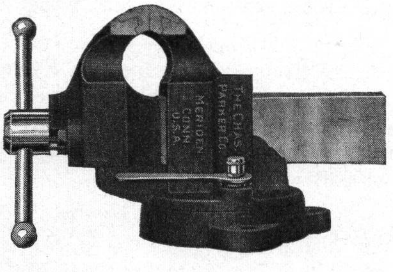
Slide is strengthened by a solid under portion instead of the usual hollow casting. Oversize screw is drop forged, with a one-piece handle, threaded to give quickest possible action and still have proper holding power. Highest grade malleable iron nut. Tension spring and screw holds handle in any position, yet it can be moved easily.



Stationary Base

Nos.	Each	Jaw, in.	Opens, in.	Wt. each, lbs.
953	$ 20.00	3	4½	23
953½	22.50	3½	5½	35
954	25.00	4	6½	46
954½	31.00	4½	7	63
955	40.00	5	8	85
956	78.00	6	10½	132
958	150.00	8	13¾	245

Open stock.



Swivel Base

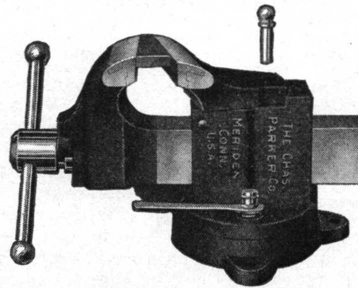
Positive in action. Hexagon wrench is easy to operate.

Nos.	Each	Jaw, in.	Opens, in.	Wt. each, lbs.
973	$ 26.00	3	4½	26
973½	30.00	3½	5½	42
974	34.00	4	6½	59
974½	40.00	4½	7	76
975	60.00	5	8	104
976	104.00	6	10½	157
978	196.00	8	13¾	298

Open stock.

MACHINISTS' VISES

PARKER "VICTOR"



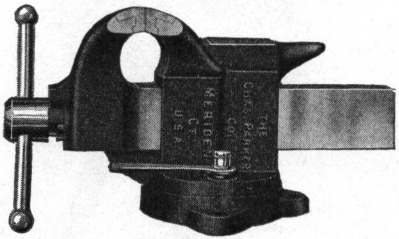
Swivel Base, Swivel Jaw

Parkco metal casting, renewable steel jaws; solid underportion in slide; extra strong screw and nut. Handle stays put anywhere.

By removing the pin, the top of the back jaw can be swiveled to hold odd shaped pieces for filing, etc.

Nos.	Each	Jaw, in.	Opens, in.	Wt. each, lbs.
383½	$ 40.00	3½	5	51
384½	56.00	4½	6	71
386	120.00	6	9½	174

PARKER "BIG BEAR"



Swivel Base

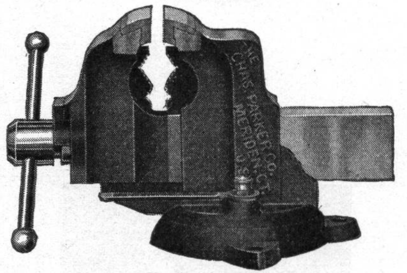
For heavy work in the industrial and service station field. Heavier than the regular machinists' vise. Oversize screw and nut, and heavy anvil.

Parkco metal castings; renewable steel jaws; handle stays put anywhere.

Nos.	Each	Jaw, in.	Opens, in.	Wt. each, lbs.
994	$43.00	4	5½	89
995	64.00	5	6	112

COMBINATION PIPE VISES

PARKER



Swivel Base

Designed for the plumbing and railway fields. The pipe jaws, made of highest grade steel, milled and tempered in oil are designed so that they do not project beyond the face of the steel jaws.

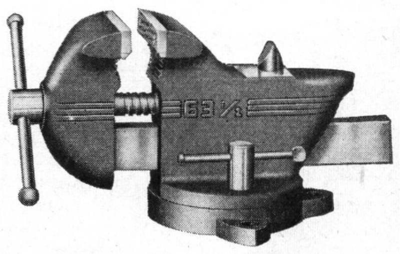
Parker metal castings; renewable steel vise jaws. Handle stays put in any position.

Nos.	Each	Jaws, in.	Opens, in.	Holds pipe, in.	Wt. each, lbs.
433½	$35.00	3½	3	2	47
434½	48.00	4½	5	3	75
435	76.00	5	6	4	116
436	120.00	6	9½	6	185

All above, open stock.

UTILITY VISES

PARKER



Swivel Base

Removable hardened steel jaws. Steel screw and handle. Sliding steel bar. Steel cut-off tool.

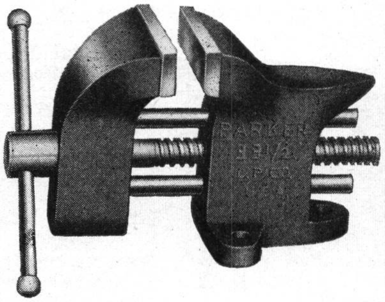
A high grade utility vise for service stations, etc.

Each

No. 63½—Jaws 3½ in. wide; wt. each 17 lbs. $8.50

Six in a case.

PARKER



Stationary Base

Steel rods accurately machined to fit back jaws. Steel screw and handle. Smooth polished jaws.

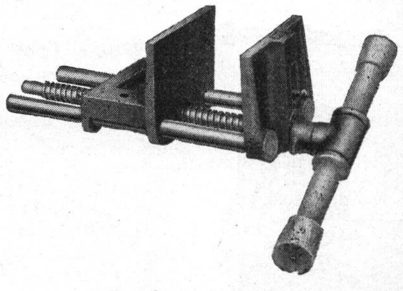
Each

No. 33½—Jaws 3½ in. wide; wt. each 9 lbs. $3.90

Twelve in a case.

WOODWORKERS' VISES

PARKER



Continuous Screw

For general use in woodworking or manual training shops. Designed to be fastened underneath the work bench, leaving jaws flush with the top.

Cast iron jaws; steel screw. Steel guide rods keep jaws in alignment. Dog in front jaw. Wood handle.

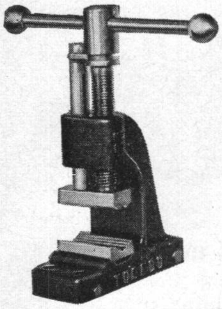
Each

No. 25W—4x7 in. jaws, 9 in. jaw opening; wt. each 23 lbs. $17.00

Open stock.

PIPE VISES

TOLEDO



Open Side

Heavy malleable iron frame; steel screw and handle. Both upper and lower jaws are heat treated steel, full overlapping and will hold all pipe perfectly.

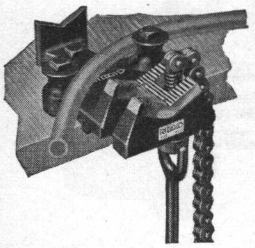
A practical and convenient vise that eliminates the unlatching and tipping back a yoke for long lengths of pipe.

Excellent for brass or copper pipe and for fitting make-up work.

Nos.	Each	Holds pipe, in.	Length jaws, in.	Wt. each lbs.
00	$7.00	⅛ to 1½	2¼	6¾
0	9.00	⅛ to 2½	2½	12

One in a box.

RIDGID BENCH CHAIN



Special Malleable Frame

Highest quality tool steel jaws, hardened for long wear.

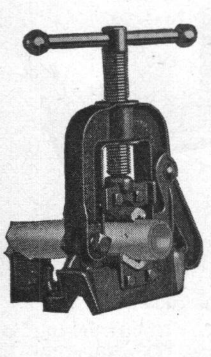
Handy pipe rest and bender.

Compact and very powerful. Handle a wide range of sizes of pipe.

Nos.	Each	Holds pipe, in.	Wt. each, lbs.
BC2	$ 5.35	⅛-2	5½
BC4	10.85	¼-4	12
BC5	14.45	¼-5	12
BC6	19.50	½-6	20¼
BC8	26.05	½-8	33½

Open stock.

RIDGID BENCH YOKE



Hinge Type

Strong malleable yoke and base, equipped with integral pipe rest and pipe bender.

Lon-Grip jaws to protect polished pipe.

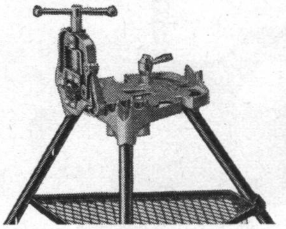
All jaws made of finest quality tool steel, hardened for firm grip and long wear.

Nos.	Each	Holds pipe, in.	Wt. each, lbs.
BY1¼	$ 4.60	⅛-1¼	3½
BY2-A	6.90	⅛-2	11½
BY2½	8.20	⅛-2½	12
BY3	11.00	⅛-3	16
BY3½	12.30	⅛-3½	17
BY4	15.00	⅛-4	24
BY4½-5	17.05	⅛-5	30
BY6	38.40	⅛-6	50½

Open stock.

PIPE VISES AND STANDS

RIDGID TRI-STAND



With Yoke Type Vise

Special malleable frame; tool steel jaws, hardened for firm grip and long wear.

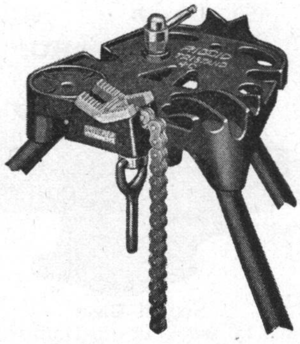
Wide roomy stand for dope pot, oil can and tools; balanced to prevent tipping; adjustable ceiling brace, screw-down feet.

Pipe rest; three benders that will not collapse pipe. Legs hinged at tray so they fold in and chain for easy carrying.

Each

No. TSY-2½—Capacity ⅛ to 2½ in. pipe; wt. each complete 48 lbs. $23.30

Open stock.



With Chain Vise

Highest quality tool steel jaws, scientifically hardened for firm grip and hard wear. Base is of strong, special malleable metal. Hinged legs.

Wide, roomy stand for dope pot, oil can and tools; special rim and slots for hanging tools.

Balanced to prevent tipping, adjustable ceiling brace, screw-down feet.

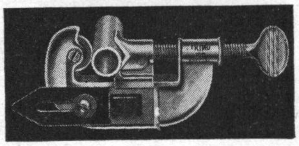
Each

No. TSC4—Holds ¼ to 4 in. pipe; wt. each 43 lbs. $24.90

Open stock.

TUBE CUTTERS

TRIMO POCKET



With Sliding Spring-Lock Safety Reamer

For tubing up to 1 in. OD.

Extra thin razor edge which assures faster, easier cutting with practically no burr. Reamer has two cutting edges with bevel machine ground to most efficient rake. Rustproof finish.

Each

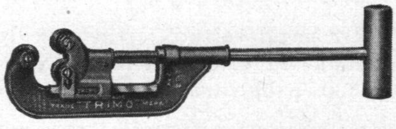
No. 100—4½ in. long closed; wt. each ½ lb. $1.50

Extra Wheels .... .20

One in a box.

PIPE CUTTERS

NEW TRIMO



With One Cutter Wheel and Two Rollers

Drop forged steel frame, rust-proof cadmium plated. Rust-proof Tricrome chrome vanadium steel cutter wheel, two case-hardened steel rollers.

This pipe cutter may be used either as a 2-roll and 1-wheel cutter for open work, or as a 3-wheel cutter for close quarters, by removing the rolls and substituting wheels.

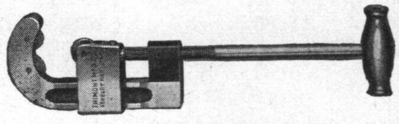
Nos.	Each	Cuts pipe, in.	Length, in.	Wt. ea., lbs.
1	$ 9.40	⅛ to 1¼	15¾	5¼
2	12.60	⅛ to 2	17½	6
3	21.00	1 to 3	19½	8¾
4	42.00	2 to 4	24	13¾

Extra Parts

For Cutters, Nos.	Knife edge wheels each	Knurled edge wheels each	Rolls each	Pins per dozen
1	$1.20	$1.20	$0 60	$2.40
2	1.20	1.20	.60	2.40
3	1.80	1.80	.80	3.60
4	1.80	1.80	.80	3.60

Open stock.

TRIMO "BARNES" PATTERN



Three-Wheel Style

Drop forged steel frame, chrome-vanadium steel cutter wheels, long wheel hubs.

Where it is impossible to revolve cutter entirely around the pipe the "Barnes" pattern three-wheel style of pipe cutter is especially adapted for this work. The sliding block is of special construction and will not spread.

Nos.	Each	Cuts pipe, in.	Length, in.	Wt. ea., lbs.
1B	$ 9.40	⅛ to 1	13	3
2B	12.60	⅛ to 2	15½	5
3B	21.00	1½ to 3	20½	8½
4B	42.00	2½ to 4	24	13½
5B	63.00	4 to 6	30	22

One in a box.

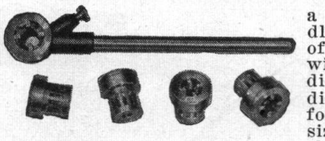
Extra Parts

For Cutters, Nos.	Knife edge wheels each	Knurled edge wheels each	Pins per dozen
1B	$0.84	$0.84	$1.80
2B	1.00	1.00	1.80
3B	1.40	1.40	1.80
4B	1.70	1.70	3.60
5B	1.90	1.90	3.60

Open stock.

PIPE STOCKS AND DIES

TOLEDO RATCHET No. 00



Consists of a ratchet handle and a set of die heads with dies. One die head, with dies, required for each pipe size; instantly changed.

Dies are made of finest tool steel and are precision ground. They are removable from die heads and can be reground or replaced.

Light, compact and will thread pipe in corners.

Ratchet handle 17 in. long.

No. 00—Complete

Cap. pipe, in.	Per set	No. of die heads	Wt. per set, lbs.
⅛ to ¾	$17.00	5	9¾
¼ to ⅜	14.20	4	8¼
⅜ to ¾	11.40	3	7
½ to ¾	8.60	2	5½

One set in a box.

Each

Extra Ratchet Handle—Wt. each 3 lbs. $2.60

Extra Die Heads with R.H. Dies for No. 00

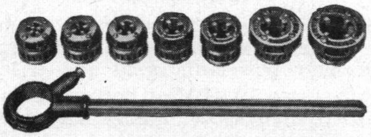
Size, in.	Each	Wt. each, lbs.
⅛	$2.80	2
¼	2.80	2
⅜	2.80	2
½	3.00	2
¾	3.00	2

Per set

Extra Dies—4 segments ⅛, ¼, ⅜, ½ or ¾ in.; wt. per set 2 oz. ..$1.50

Note—See following page for conduit dies.

TOLEDO RATCHET No. 11



Similar in design to No. 00 except somewhat larger. Produces perfectly tapered threads. Die heads are instantly changed by pulling the ratchet pawl knob.

Ratchet handle 24 in. long.

No. 11—Complete

Cap. pipe, in.	Per set	No. of die heads	Wt. per set, lbs.
⅛ to 1¼	$26.40	7	18
⅛ to 1	22.70	6	15½
¼ to 1¼	23.20	6	15
¼ to 1	19.50	5	14
⅜ to 1¼	20.00	5	14
⅜ to 1	16.30	4	14
½ to 1¼	16.80	4	13
½ to 1	13.10	3	10

One set in a box.

Each

Extra Ratchet Handle—Wt. each 4 lbs. $3.00

Extra Die Heads with R.H. Dies for No. 11

Size, in.	Each	Wt. each, lbs.
⅛	$3.20	2
¼	3.20	2
⅜	3.20	2
½	3.20	2
¾	3.20	2
1	3.70	2
1¼	3.70	2

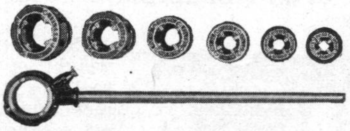
Extra Dies; 4 Segments

Size, in.	Per set	Wt. set, oz.
⅛, ¼, ⅜, ½, ¾	$1.50	2
1, 1¼	1.90	3

Note—See following page for conduit dies.

PIPE STOCKS AND DIES

TOLEDO RATCHET No. 12



Similar to No. 11 but larger. Threads right hand only and produces perfect tapered threads. Die heads are changed instantly by pulling the ratchet pawl knob dropping out one head and inserting the desired size. Die segments can be removed from the heads, reground or replaced.

Ratchet handle 29 in. long.

No. 12—Complete

Cap. pipe, in.	Per set	No. of die heads	Wt. per set, lbs.
⅛ to 2	$43.80	9	35
¼ to 2	39.80	8	31½
⅜ to 2	35.80	7	29
½ to 2	31.80	6	26¼
¾ to 2	27.80	5	23¾
1 to 2	23.80	4	21

One set in a box.

Each

Extra Ratchet Handle—Wt. each 6 lbs. $4.00

Extra Die Heads with R.H. Dies for No. 12

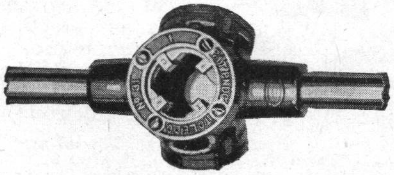
Size, in.	Each	Wt. each, lbs.
⅛	$4.00	3
¼	4.00	3
⅜	4.00	3
½	4.00	3
¾	4.00	3
1	4.40	3½
1¼	4.40	3½
1½	5.00	4
2	6.00	4

Extra Dies; 4 Segments

Size, in.	Per set	Wt. set, oz.
⅛, ¼, ⅜, ½, ¾	$1.50	2
1, 1¼	1.90	3
1½	2.50	8
2	3.25	8

Note—See following page for conduit dies.

TOLEDO THREE-WAY Nos. 30 and 31



One of the lightest, smallest, and easiest to operate of 3-way threading tools.

Each die head "on center" insuring a perfectly balanced tool. The die segments are removable and can be reground or replaced.

Per set

No. 30—Capacity ⅜ to ¾ in. pipe; two handles and 3 dies, threading ⅜, ½ and ¾ in. pipe, length over all 30½ in.; wt. per set 5¼ lbs. ....$ 9.00

No. 31—Capacity ½ to 1 in. pipe, two handles and 3 dies, threading ½, ¾ and 1 in. pipe, length over all 39½ in.; wt. per set 8¼ lbs. 10.50

One set in a box.

Extra R.H. Dies

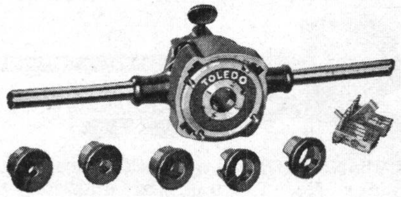
For Nos. 30 and 31; 4 segments.

Size, in.	Per set	Wt. set, oz.
⅜, ½, ¾	$1.50	2
1	1.90	3

Note—See following page for conduit dies.

PIPE STOCKS AND DIES

TOLEDO ADJUSTABLE No. 0



This set embodies the receding die feature. As the thread is cut the dies recede thereby producing a smooth, full tapered thread, for threading the ½ and ¾ in. sizes of pipe. It is the easiest operating tool for these sizes. A locking pin instantly locks the die head and pipe holder together when threading ⅛, ¼ and ⅜ in. pipe. One set of dies is used for threading ⅛ in., a second set for ¼ and ⅜ in., and a third set for ½ and ¾ in. pipe. The dies are changed from one size to another within their range simply by slipping them in the proper steps of the case. They are adjustable to cut over-or-under size as well as standard threads.

The complete tool consists of a tool body, two handles, three sets of dies, and bushings for each of the five sizes. The net weight is only 8 lbs. and the length over all is 24 in.

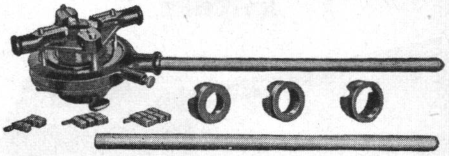
Cap. pipe, in.	Per set	Wt. set, lbs.
⅛ to ¾	$17.00	9½
¼ to ¾	15.05	9

One set in a box.

Extra R.H. Dies

Size, in.	Per set	Wt. set, oz.
⅛	$1.60	5
¼ & ⅜	1.60	5
½ & ¾	1.60	5

TOLEDO ADJUSTABLE RATCHET No. 1A



This popular tool uses the famous Toledo receding die principle. As the thread is cut the dies recedes thereby producing a smooth, full tapered thread. A separate set of dies for each size of pipe assures proper clearance and easy cutting. The dies are instantly adjusted for cutting over-and-under as well as standard threads. It is equipped with a ratchet which makes it easy to operate in a restricted place, or it may be used with two handles as an ordinary stock when desired.

The complete tool consists of the tool body, two handles, a separate set or right hand dies and a bushing for each of the four sizes of pipe from 1 to 2 in. The net weight is 22 lbs. and the over all length is 32 in.

Per set

No. 1A—Cap. 1 to 2 in. pipe, 32 in. long; wt. per set 24 lbs. $20.00

One set in a box.

Extra R.H. Dies

Size, in.	Per set	Wt. set, oz.
1, 1¼ or 1½	$1.50	7
2	2.00	5

TOLEDO ADJUSTABLE RATCHET No. 1R

The 1R tool has all the features of the No. 1A model except it is equipped with a single ratchet handle. For this reason it is lighter in weight than the No. 1A. It uses regular No. 1A dies.

The complete tool consists of the tool body, one handle, a separate set of right hand dies and a bushing for each of the four sizes of pipe in its range.

Per set

No. 1R—Cap. 1 to 2 in. pipe; wt. per set 22 lbs. $19.00

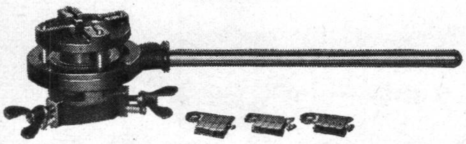
One set in a box.

Extra R.H. Dies

Size, in.	Per set	Wt. set, oz.
1, 1¼ or 1½	$1.50	7
2	2.00	5

PIPE STOCKS AND DIES

TOLEDO ADJUSTABLE RATCHET No. 1BR



This No. 1BR has all the features of the popular No. 1A tool. In addition the No. 1BR has a new type pipe holder which makes it the ideal 1 to 2 in. ratchet tool. No bushings are required. The tool is easily centered on the pipe by means of set screws and graduated guide posts which carry a line for each size of pipe. The three broad face chuck jaws hold the tool rigidly to the pipe assuring perfect threads.

The complete tool consists of the tool body, one handle, and a separate set of right hand dies for each of the four sizes of pipe in its range. The net weight is 21 lbs. and the over all length is 32 in.

Per set

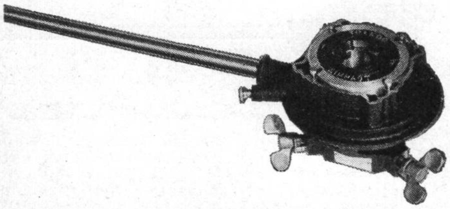
No. 1BR—Cap. 1 to 2 in, pipe 32 in. long; wt. per set 23 lbs. $22.00

One set in a box.

Extra R. H. Dies

Size, in.	Per set	Wt. set, oz.,
1, 1¼ or 1½	$1.50	7
2	2.00	5

TOLEDO SIMPACT ADJUSTABLE RATCHET



The Simpact is the easiest operating 1 to 2 in. self-contained threading tool made. It has few moving parts, is light in weight, yet strong and sturdy and will give years of satisfactory service.

The single set of high speed steel dies cut all four sizes of pipe from 1 to 2 in. They are automatically oiled by oiling pockets in the head which continually drip oil on the work. The dies bear directly against the tapered steps in the case. To change sizes just push the size selector buttons, turn the head slightly and slip the dies into the proper steps and the size is changed.

No bushings are required as the Simpact uses the three-jaw pipe holder which is used on the No. 1BR as described above.

The complete tool consists of the tool body, one set of 1 and 2 in. high speed steel dies and one 24 in. handle. The net weight is 20¼ pounds and the over all length is 33 in.

Per set

Simpact Set—Cap. 1 to 2 in. pipe; 24 in. handle and 4 dies, threading 1, 1¼, 1½ and 2 in.; wt. per set 24 lbs. $24.00

One set in a box.

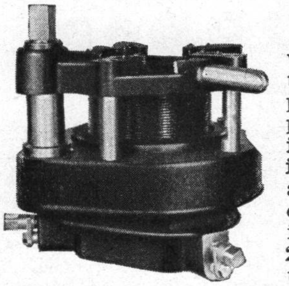
Extra R. H. Dies

Per set

1 to 2 in.—Wt. per set 12 oz. $3.20

PIPE STOCKS AND DIES

TOLEDO GEARED, ADJUSTABLE SUPER-THREADERS No. 2BR



The net weight of this tool as it is picked up to be put on the pipe is but 57 lbs. It is lighter than any other tool of this capacity. The No. 2BR utilizes the famous Toledo receding die principle and uses a separate set of dies for each size of pipe from 2½ to 4 in.

It is equipped with a new type 3-jaw pipe holder. No bushings are needed and this construction is more positive and longer lived than any other mechanism. The broad-faced chuck jaws are centered on the pipe by means of set screws and graduated guide posts which carry a line for each size of pipe. It is very easy to center this tool and the three chuck jaws hold the tool rigidly to the pipe assuring clean-cut perfectly tapered threads that are absolutely straight on the pipe.

The complete tool consists of the tool body, separate set of right hand dies for each of the sizes from 2½ to 4 in., set screw wrench, and a ratchet handle, all packed in a strong carton.

No. 2BR—Complete

Cap. pipe, in.	Per set	Wt. per set, lbs.
2½, 3, 3½, 4	$80.00	85
2½, 3, 4	77.00	83

One set in a box.

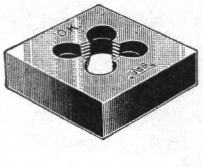
Extra R.H. Dies

Per set

2½, 3, 3½ or 4 in.—Wt. set 3 lbs. ..$5.00

SQUARE PIPE DIES

"OK" SOLID



Forged Steel

Will fit square stocks of practically any manufacture.

NPT right hand threads only.

¾ in. thick.

Nos.	Each	Size, in.	Threading pipe, in.
1	$3.50	2½x2½	⅛, ¼, ⅜, ½, ¾, 1
1½	4.30	3 x3	¼, ⅜, ½, ¾, 1, 1¼

Open stock.

Note—See page 206 for "OK" square stocks.

ELECTRIC CONDUIT DIES

TOLEDO

Segmental

Special dies for producing straight, running conduit threads.

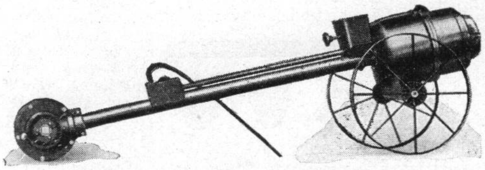
For use in Toledo pipe stocks Nos. 00, 11, 12, 30 and 31.

Size conduit, in.	Per set	Size conduit, in.	Per set
⅛	$1.50	**1**	$1.90
¼	1.50	**1¼**	1.90
⅜	1.50	**1½**	2.50
½	1.50	**2**	3.25
¾	1.50		

Open stock.

POWER DRIVES

TOLEDO STANDARD



Designed to operate hand threading and cutting devices by electricity. It will save approximately four-fifths of the elapsed time as compared with hand operation on a pipe threading or cutting job. It is also used to turn sheet metal rolls, operate hoisting winches, to pull electric cable through conduit, etc.

It consists of a specially designed electric motor, mounted in a housing which also encloses a transmission gearing, communicating with a driving shaft extending to the operating end of the shaft housing, the whole mechanism being mounted on iron wheels, for easy movement from place to place.

Each

Standard—1½ HP motor for 115-230 volts, 60 cycles, single phase, with 20 ft. of flexible cable; wt. each 325 lbs. $300.00

One in a box.

Note—Other voltages can be furnished, prices on request.

TOLEDO SUPER

Similar in appearance to the Standard power drive above but slightly larger. Extremely powerful, rapid and efficient.

Rotates at 57 RPM at low speed and 97 RPM at high speed. Easily moved about on strong iron wheels.

Each

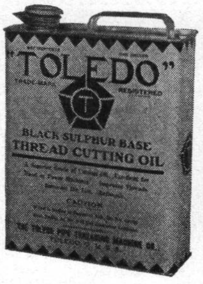
Super—2 HP motor for 220 or 440 volts, 60 cycles, 3 phase, with 20 ft. of rubber covered cable; wt. each 396 lbs. $390.00

One in a box.

Note—When ordering specify whether for 220 or 440 volts.

THREAD CUTTING OIL

TOLEDO



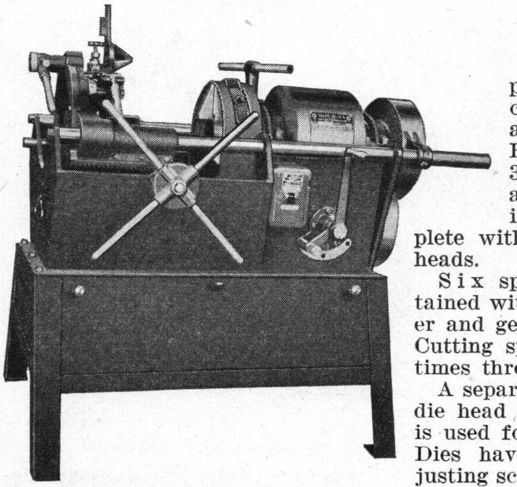
Black Sulphur Base

A high grade thread cutting oil antiseptic, will not turn rancid and assures smooth clean threads, tight joints and increased die service.

Size	**1 gal. can**	**5 gal. pail**
Cans in case	6	..
Wt. case, lbs.	53	45
Per gallon	$1.10	1.10

POWER PIPE MACHINES

TOLEDO No. 1-2-4, ELECTRIC



Capacity 1 to 4 Inch Pipe

A high speed production machine, cuts thread and reams pipe. Equipped with a 3 HP motor. Operating changes easily made. Complete with right hand die heads.

Six spindle speeds obtained with one clutch lever and gear shifting lever. Cutting speed about 3½ times threading speed.

A separate quick-opening die head of special design is used for each size pipe. Dies have individual adjusting screws so that each die may be set to exact share of the work. Die heads are changed instantly from one size to another merely by slipping them off the die head supporting posts. Especially designed cutter head with four double-edged high speed steel knives which are easily fed by a ratchet handle conveniently located at the top of the cutter head.

A cone type single blade reamer is mounted on an arm which can be instantly swung into position for reaming and fed by carriage wheel. 14 inch front and rear three-jaw universal type chucks with three positions for chuck wrench. Centrifugal type oil pump.

Each

No. 1-2-4—Complete with 3 HP, 220-440 volt, 3-phase, 60 cycle motor; shipping wt. 2500 lbs. $2400.00

TOLEDO 2 IN. HIGH SPEED ELECTRIC

Similar in design and construction to the 1-2-4 machine described above. It is a high production pipe machine to cut thread and ream pipe up to 2 in. inclusive. A separate, quick opening die head is used for each size pipe.

Each

2 in.—Complete with 1½ HP, 220-440 volt, 3-phase, 60 cycle motor; shipping wt. each 1110 lbs. $1300.00

One in a box.

Note—Can be furnished for other current characteristics. Prices on request.

TOLEDO No. 999, ELECTRIC

This machine is made in two models—the **Super** using quick-opening die heads and dies—the **Standard** using non-opening ring type die heads. Both machines are indentical except for the style of die heads, and both cut, thread, and ream pipe up to and including 2 in.

The **Super** Model threads bolts from ⅜ to 1½ in. Threads 2 in. pipe in 22 seconds, cuts off 2 in. pipe in 10 seconds, and smaller sizes relatively fast.

Standard Model threads 2 in. pipe in 30 seconds; the cutting off time same as Super.

Regularly furnished with 115 volt universal motor.

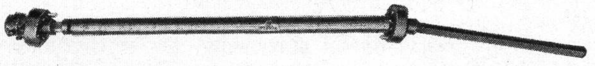
Each

No. 999 Super—Ship. wt. each 465 lbs. $514.50

No. 999 Standard—Ship. wt. each 453 lbs. 490.00

One in a box.

UNIVERSAL DRIVE SHAFTS



Designed to operate geared threading and cutting tools with power pipe machines.

The chuck shaft has three flat sides to facilitate holding in the three-jaw chuck of the machine. It is extra long which permits inserting in the rear chuck of above machines and operating threading and cutting tools up to 12 in. capacity from the rear of these machines.

The socket it fitted with set screw and is adjustable for large or small driving pinions.

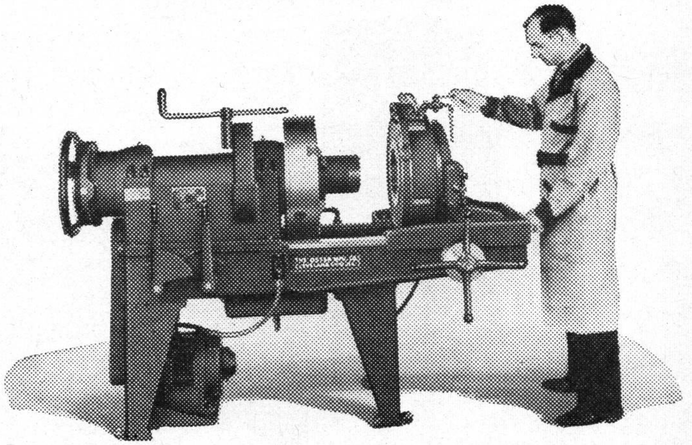
Each

No. UDS—20 in. chuck shaft; 64½ in. long over all; ship. wt. each 24 lbs. $30.00

One in a box.

PIPE THREADING MACHINES

Nos. 714 AND 716 OSTER "WILCO"



Standard Range No. 714—1 to 4 in. pipe; **Extra Range**—½ and ¾ in. pipe. **Bolt Range**—¾ to 3 in.

Standard Range No. 716—1 to 6 in. pipe. **Bolt Range**—1 to 4 in.

Oster Nos. 714 and 716 "Wilco" machines are designed primarily for large scale maintenance threading but are also widely used for production threading.

A single die-head covers the entire range of each machine and one set of work holders and dies threads all sizes, right hand, American National Standard of the same pitch, without change.

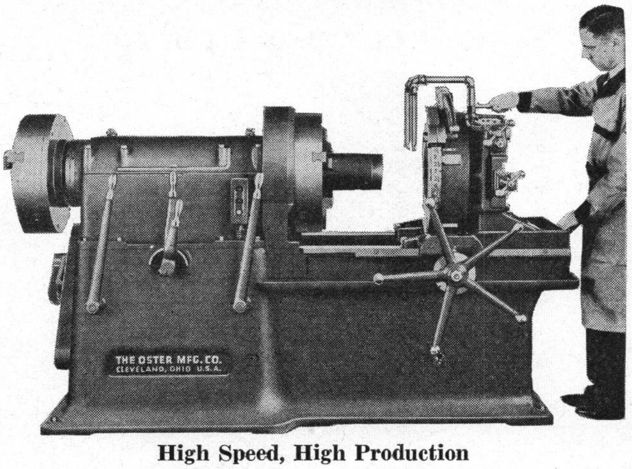
Two sets of High Speed Steel dies and two sets of alloy steel holders cover the standard pipe range of each machine. One or more dies are replaceable without renewing entire set.

Motor is 3 phase, 60 cycle, 3 HP for the No. 714 "Wilco" and 5 HP for the No. 716 "Wilco." Motor control is magnetic, non-reversing. Each machine is equipped with blade type cut-off device and reaming and chamfering tool.

"Wilco" machines offer exceptional cost-saving advantages in shop maintenance work.

Prices on Request.

Nos. 6A AND 8 OSTER "RAPIDUCTION"



High Speed, High Production

Standard Range No. 6A—1 to 6 in. pipe; **Bolt Range**—1 to 4 in.

Standard Range No. 8—2½ to 8 in. pipe.

Oster "Rapiduction" machines are designed particularly for large scale production threading where sustained accuracy and lowest obtainable threading costs are demanded.

Each machine is equipped with the quick-acting "Rapiduction" Die-Head which handles all sizes within the range of the machine. Movement of cam lever sets chasers for any size. Extreme accuracy in setting chasers for any depth of thread desired is quickly obtained by micrometer adjustment of the cam lever. Chasers are High Speed Steel, small, segmental type; can be reground repeatedly; each segment replaceable at low cost without replacing entire set.

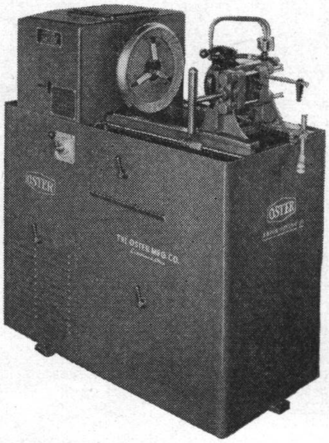
Standard equipment includes lathe type Cut-Off device and Reaming and Chamfering device, both of High Speed Steel.

Motor is 3 phase, 60 cycle. (Motors of other specifications at extra cost).

Prices on Request.

PIPE THREADING MACHINES

Nos. 782 AND 782R OSTER "RAPIDUCTION JR."



Standard Range—¼ to 2 in. pipe
Extra Range—⅛ in. pipe
Bolt Range—¼ to 1½ in.

These moderately priced machines are designed for general purpose as well as long production threading. They are particularly suited for use in shops having a reasonable quantity of work.

Ball bearing mounting of spindle and Worm Drive are features of both machines which are identical in basic construction but differ in the types of die-heads and work holders.

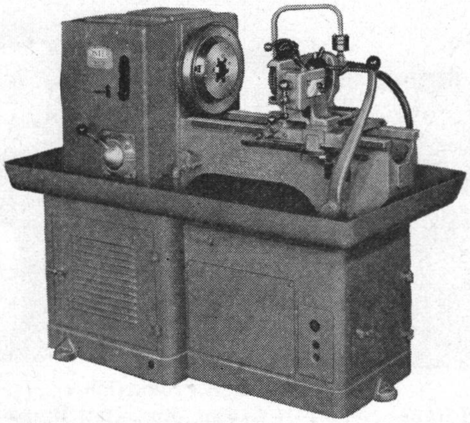
No. 782 "Tom Thumb" is equipped with Stationary, quick-acting Die-Head and the new "Auto-Grip" automatic front chuck which eliminates use of chuck bar and T wrench.

No. 782R "Tom Thumb" is equipped with Revolving Die-Head and quick-acting, open type vise. Bent as well as straight pipe, conduit, bolts, rods, etc., can be threaded on this machine.

Both machines have 2 HP 2 speed (900-1800 RPM) motor, 3 phase, 60 cycle, with speed selector switch. (Other motors available at extra cost.)

Prices on Request

No. 702 OSTER "WILCO" FLOOR TYPE



Standard Range—¼ to 2 in. pipe
Extra Range—⅛ in. pipe
Bolt Range—¼ to 1½ in.

Features of the No. 702 "Wilco" establish new and higher standards of production compared with all 2 in. pipe threading machines on the market. Faster threading and minimum handling are due to the combination of three speed motor, worm gear drive, ball bearing mounted spindle, the new "Auto-Grip" automatic gripping front chuck, quick-opening, adjustable die-heads, and the completely modern design for right-hand operation.

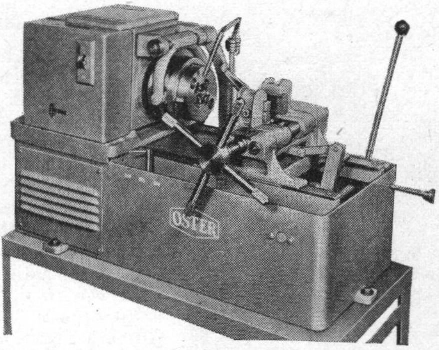
Versatility of the No. 702 "Wilco" is demonstrated by its ability to thread both ends of 2 in. pipe only 3½ in. long, without use of a nipple chuck.

Motor is 3 speed, single voltage, 3 phase, 60 cycle, with speed selector switch. (Motors of other specifications at extra cost.)

Prices on Request

BOLT THREADING MACHINES

Nos. 581A AND 582A OSTER "TOM THUMB" PORTABLE



Standard Bolt Range—¼ to 1½ in.
Pipe or Nipple Range—⅛ to 1¼ in. (No. 581A machine)
Pipe or Nipple Range—½ to 2 in. (No. 582A machine)

These all-purpose, portable, Semi-Automatic machines are designed for production threading of bolts, rods, studs, pipe and nipples. Equipped with Semi-Automatic, Revolving Die-Head and open-type vise, each machine is capable of almost any production speed requirement within its range of work.

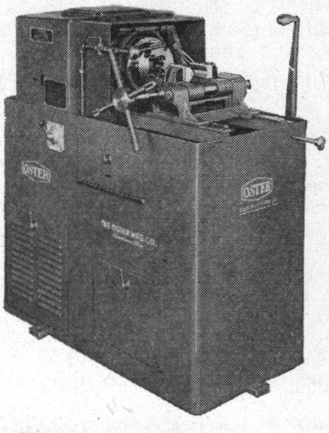
Nos. 581A and 582A "Tom Thumb" machines have Ball Bearing mounted spindle and Worm Drive. Both machines are identical with the following exceptions: No. 582A model has die-head with larger bore and a lower range of spindle speeds to permit threading pipe up to 2 in. diameter.

Spindle speeds (variable with a load) are 47 to 105 RPM for the No. 581A model and 30 to 65 RPM for the No. 582A model.

Machines are regularly furnished for bench use but are obtainable at extra cost mounted on either an all steel wheel stand or pipe leg stand.

Prices on Request

Nos. 781A AND 782A OSTER "RAPIDUCTION JR."



Standard Bolt Range—¼ to 1½ in.
Pipe or Nipple Range—⅛ to 1¼ in. (No. 781A machine)
Pipe or Nipple Range—½ to 2 in. (No. 782A machine)

These machines are equipped with semi-automatic Revolving die-head and quick-acting, open type vise. Die-head opens and resets to size automatically by movement of vise carriage. This feature and the open type vise speed up handling of stock in and out of machine, contributing to production speeds and lower unit costs.

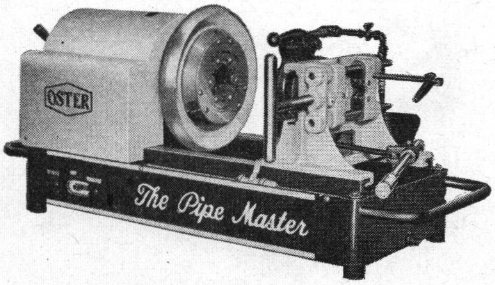
"Rapiduction Jr." features include Ball Bearing mounted spindle and Worm Drive. Nos. 781A and 782A machines are identical excepting that the die-head of the No. 782A model has a larger bore to permit threading pipe up to 2 in. diameter.

Both machines are regularly equipped with 2 speed, single voltage, 3 phase, 60 cycle, 2 HP motor with speed selector switch. (Motors of other specifications at extra cost.) Spindle speeds are 25-50-100-200 RPM. Additional spindle speeds of 200-400 available at extra cost.

Prices on Request

PORTABLE THREADING MACHINES

Nos. 502 AND 502R OSTER "PIPE MASTER" STANDARD



Standard Range—¼ to 2 in. pipe

Extra Range—⅛ in. pipe

Range With Drive Shaft—2½ to 8 in. pipe

Bolt Range—¼ to 1½ in.

The lowest priced, complete, portable power pipe machines on the market. Two Standard models (Steel construction).

No. 502 "Pipe Master" Standard Model is equipped with Stationary, quick-acting Die-Head and the new "Auto-Grip" automatic front chuck, an exclusive Oster feature (Pat. Applied For).

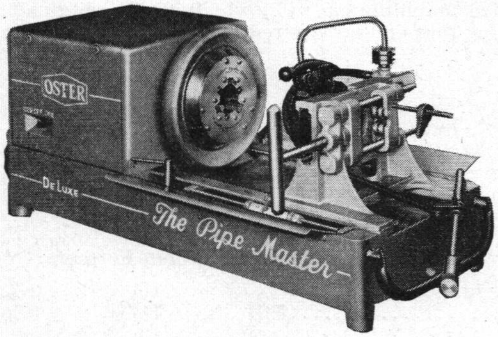
No. 502R "Pipe Master" Standard Model is equipped with Revolving die-head and quick-acting, open-type vise. This machine permits easy threading of bent and straight pipe, conduit, bolts, rods. etc.

Both machines are regularly furnished for bench use but can be obtained with either all steel wheel stand or pipe leg stand at extra cost. Four sets of dies to cover standard pipe range furnished with each machine.

Motor is ½ HP universal, geared head type, 110 volts, either AC single phase, or DC. (Other voltages available.)

Prices on Request

Nos. 502D AND 502DR OSTER "PIPE MASTER" DELUXE



Standard Range—¼ to 2 in. pipe

Extra Range—⅛ in. pipe

Range With Drive Shaft—2½ to 8 in. pipe

Bolt Range—¼ to 1½ in.

The two Deluxe models of Oster "Pipe Master" Portable Threading Machines are developments of the world-famous No. 502 "Pipe Master." The Deluxe "Pipe Masters" incorporate such features as aluminum alloy construction and hinged mounting of motor, switch and pump for quick accessibility to those parts.

No. 502D "Pipe Master" Deluxe Model is equipped with Stationary, quick-acting Die-Head and the new "Auto-Grip" automatic gripping front chuck. This is an exclusive Oster feature (Pat. Applied For).

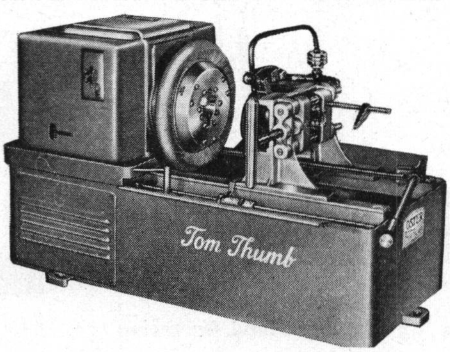
No. 502DR "Pipe Master" Deluxe Model is equipped with Revolving Die-Head and quick-acting, open-type vise for threading bent and straight pipe, conduit, bolts, rods, etc.

Both machines are regularly furnished for bench use but can be obtained with either all steel wheel stand or pipe leg stand at extra cost. Four sets of dies to cover standard pipe range are furnished with each machine. Motor is ½ HP universal, geared head type, 110 volts, either AC single phase, or DC. (Other voltages available.)

Prices on Request

PORTABLE THREADING MACHINES

Nos. 582 AND 582R OSTER "TOM THUMB"



Standard Range—¼ to 2 in. pipe

Extra Range—⅛ in. pipe

Range With Drive Shaft—2½ to 8 in. pipe

Bolt Range—¼ to 1½ in.

Oster "Tom Thumb" machines are equipped with Ball Bearing mounted spindle, Worm Drive, and incorporate other high standards of construction usually found only in the larger, floor type threading machines. Production speeds suitable to almost every requirement are obtainable with "Tom Thumb" machines.

No. 582 "Tom Thumb" is equipped with Stationary, quick-acting Die-Head and the new "Auto-Grip" automatic front chuck that does away with chuck bar and T wrench.

No. 582R "Tom Thumb" is equipped with Revolving Die-Head and quick-acting, open-type vise for threading bent as easily as straight pipe, conduit, bolts, rods, etc.

Both machines are regularly furnished for bench use but can be obtained with either all steel wheel stand or pipe leg stand at extra cost. Four sets of dies to cover standard pipe range furnished with each machine.

Motor is ½ HP universal, variable speed, 110 volts, either AC single phase, or DC. (Other voltages available.)

Prices on Request

POWER VISE STANDS

No. 422 OSTER

A Portable Power Drive for Hand Pipe Tools

Standard Range—⅛ to 2 in. pipe

Range With Drive Shaft—2½ to 8 in. pipe

Lowest priced portable power drive for converting hand die-stocks, cutters and reamers to power tools. New "Auto-Grip" front chuck, an exclusive Oster feature, (Pat. Applied For). The "Auto-Grip" is automatic in gripping action. It makes the No. 422 machine the fastest, safest power drive for pipe tools and the easiest to operate. (Owners of earlier Oster No. 422 machines can equip with the new "Auto-Grip." Liberal trade-in allowance on earlier-style front chucks).

Other distinctive features of the No. 422 Power Vise Stand include:

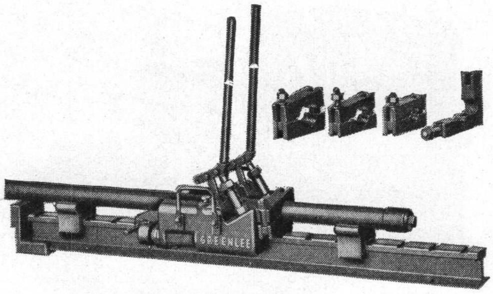
Universal centering Rear Chuck which eliminates all loose bushings and outboard pipe supports. Universal, reversible, variable speed, ½ HP motor for light socket operation. All welded steel case. Two carrying arms for easy handling and absolute centering of die-stock while threading. Ball bearing mounted motor gears. Semi-steel spindle gears. Universal vise mount plate (for any make and type of vise) and pipe bending fixture.

Spindle speeds (variable with load) 16 to 30 RPM. Net weight of machine (less legs, as carried) 140 lbs.

Prices on Request

HYDRAULIC PIPE PUSHERS

GREENLEE



For Hand Operation

Designed to install pipe underground without the expense of digging long trenches. Requires only a short trench to accommodate the pusher with a section of pipe, and only one or two men to develop the pressure by pumping the handles.

Has a capacity for 1¼ to 4 in. pipe with special clamps available for ¾ and 1 in. pipe.

Permits pushes of from 4 to 7 ft. between clamp changes.

By reversing the power unit on the base and by blocking the opposite end, the machine can be used for pulling.

	Each
No. 790—Power unit only; wt. each 160 lbs.	$280.00

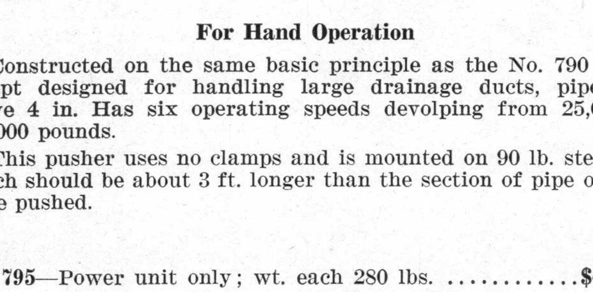
Base and Equipment

Length base, ft.	5½	6½	7½	8½
Wt. each, lbs.	145	165	185	205
Each	$45.00	52.50	60.00	67.50

Quick-Acting Clamps

Pipe size, in.	1¼	1½	2	2½	3	3½	4
Wt. each, lbs.	10	10	10	11	16	16	18
Each	$15.00	16.15	16.50	19.10	22.50	26.35	33.75

Open stock.



For Hand Operation

Constructed on the same basic principle as the No. 790 above except designed for handling large drainage ducts, pipe, etc. above 4 in. Has six operating speeds devolping from 25,000 to 150,000 pounds.

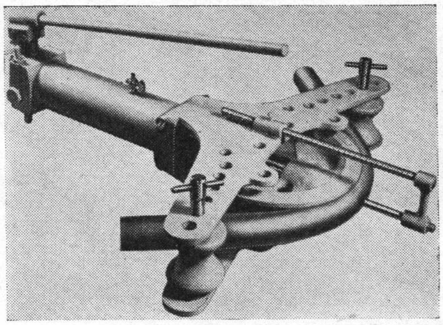
This pusher uses no clamps and is mounted on 90 lb. steel rail which should be about 3 ft. longer than the section of pipe or duct to be pushed.

	Each
No. 795—Power unit only; wt. each 280 lbs.	$487.50
	Per foot
Base and Equipment—Including backing plate and pipe supports; wt. per foot, 30 lbs.	$15.00

Open stock.

HYDRAULIC PIPE BENDERS

TAL PORTABLE



Industrial All-Purpose Model, for Pipe and Conduit

Capability—Will bend with amazing ease, without heating and without filling, all wrought iron and steel pipe, and conduit within its capacity.

Adaptability—Easily and quickly adapted to any job with quick changeover to various pipe sizes. Insert the pipe in bender and its easy hydraulic pumping action does the rest. The quick release device enables the operator to remove the pipe instantly.

Uniformity of Bend—An outstanding feature. No matter how many bends are produced the last will be the same as the first—all smooth bends, without wrinkles or kinks and with a minimum of distortion.

Portability—Being handy in size and light in weight the bender can be set up at any place of installation or repair, without bolting and may be used for many jobs requiring its powerful little pump.

Standard Bending Formers

These are the minimum radii which can be obtained. With the same bending formers any desired longer radius bend can be made.

Set No. 1—Seven Formers

Pipe sizes, in.	⅜	½	¾	1	1¼	1½	2
Radii	1⅜	1¾	2⅜	3⅜	4⅜	5½	7¾

Set No. 2—Four Long Radius Formers

Pipe sizes, in.	1	1¼	1½	2
Radii	5¾	7¼	8¼	9

Set No. 3—Two Formers

Pipe sizes, in.	2½	3
Radii	10	12

Set No. 4—Two Formers

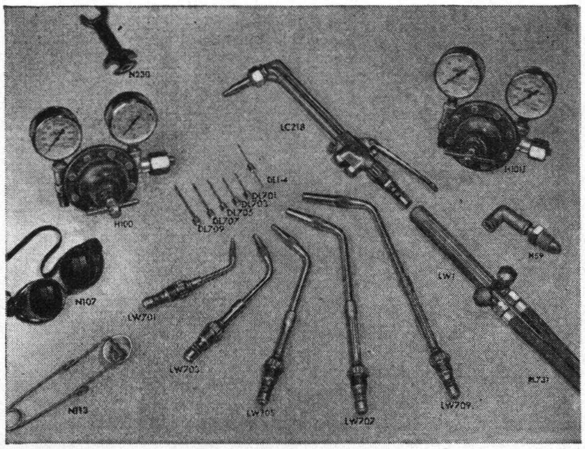
Pipe sizes, in.	3½	4
Radii	18	23

	Each
No. 2PH-C—2 in.; with eleven bending formers, sets Nos. 1 and 2; wt. each 215 lbs.	$260.00
No. 3PH-C—3 in.; with thirteen bending formers, sets Nos. 1, 2 and 3; wt. each 328 lbs.	345.00
No. 384PH-C—4 in.; with fifteen bending formers, set Nos. 1, 2, 3 and 4; wt. each 648 lbs.	760.00

Open stock.

WELDING AND CUTTING OUTFITS

SMITH'S LIFELONG



The new design of Smith's Lifelong Welding Torch body and Cutting Assembly has many time-saving and money-saving features—

- Fast line-up of tips and cutting assembly
- Gas-tight seat made without the use of a wrench
- Less wear on mixing sections
- No premixing of gases
- Flo-trol eliminates conditions causing back-fire
- Covered by Smith's "Lifelong" Guarantee

This complete all-purpose outfit is used by repair shops, manufacturing plants, construction contractors and in shops specializing in welding and blacksmithing. The welding torch has five sizes of tips with a range from 1/16 to 1 in. material. It will handle all types of fusion or bronze welding of steel, cast and wrought iron and alloy metals. The cutting assembly is supplied with one tip which has a cutting capacity up to ½ in. steel.

Additional sizes of welding tips and special purpose tips may be used in this outfit to further add to its all around usefulness.

Types BB (single stage) Oxygen and Acetylene regulators, well known for accuracy and dependability, are supplied with the standard outfit.

	Per outfit
No. **LS318**—Complete outfit comprising all parts enumerated below; wt. per outfit 32 lbs.	$134.55

Complete Outfit Includes

	Each
1—No. LS120 Lifelong welding torch body with 5 tips, case and tip cleaners	$45.00
1—No. LC218 Lifelong cutting assembly with tip No. LC1-4, N230, wrench and tip cleaner	28.00
1—No. H100 BB oxygen regulator with gauges	25.00
1—No. H101J BB acetylene regulator with gauges and H59 adaptor	22.50
1—No. RL371 25 ft. length ¼ in.-2-in-1 hose	11.20
1—No. N113 torch lighter	.35
1 pair No. N107 goggles	2.50

	Per outfit
*No. **LS338**—Same as No. LS318, less BB acetylene regulator; wt. per outfit 27 lbs.	$112.05
No. **LS319**—Complete with BB regulators and No. LC219—90° head cutting assembly instead of No. LC218; wt. per outfit 32 lbs.	134.55
*No. **LS339**—Same as No. LS319 but less No. H101J acetylene regulator; wt. per outfit 27 lbs.	112.05
No. **LS328**—Same as No. LS318 but with BB-2 two stage regulators No. H313 and H315; wt. per outfit 36 lbs.	152.55
*No. **LS348**—Same as No. LS328 but less No. H315 acetylene regulator; wt. per outfit 30 lbs.	121.05
No. **LS329**—Complete with BB-2 regulators and No. LC219 —90° head cutting assembly instead of No. LC218; wt. per outfit 36 lbs.	152.55
*No. **LS349**—Same as No. LS329 but less No. H315 acetylene regulator; wt. per outfit 30 lbs.	121.05

*Acetylene regulator not necessary when using outfit with acetylene generator.

One outfit in a box.

Guaranteed Service for the Rest of Your Life

Every purchaser of welding or cutting equipment has a right to expect maximum life and service from the equipment he buys. Smith's actually guarantee "Lifelong" service on every piece of equipment bearing the "Lifelong" or "Lifetime" trade mark. In either case, the guarantee is straightforward and clear. It means exactly what it says!

SMITH'S LIFELONG and *LIFETIME* GUARANTEES

SMITH'S WELDING TORCH BODIES, cutting assemblies and cutting torches bearing either of these trademarks:

SMITH'S LIFELONG GUARANTEE

SMITH'S Lifetime Guarantee

are guaranteed when used with genuine Smith's parts, against normal wear and tear during the lifetime of the registered owner and will be replaced or put in the operating condition of new, at the option of the manufacturer, without cost to the owner other than transportation.

All other items listed in this catalog, including welding tips, cutting tips and regulators, are guaranteed against defects in workmanship and material but do not carry a Lifelong or a Lifetime guarantee.

SMITH WELDING EQUIPMENT CORPORATION

E. H. Smith

It is obvious that the tips and the head nuts of the cutting torch and cutting assembly, which are subject to the intense heat of the oxy-acetylene flame, cannot carry the Lifelong or Lifetime guarantee, but they do carry a guarantee against defect in workmanship or material

REGISTRATION

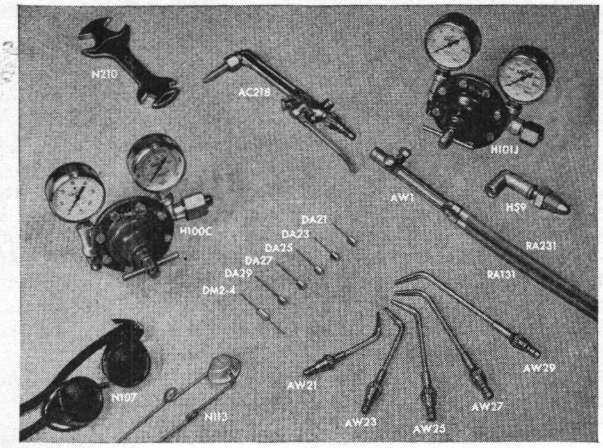
Purchasers must register with the manufacturer their names, addresses and the serial number of the part trademarked "Smith's Lifelong Guarantee" or "Smith's Lifetime Guarantee" in order to make the above guarantee effective.

CHANGE OF OWNERSHIP

In case of change of ownership, the guarantees are valid provided a "Notice of Change of Ownership" is filed with the manufacturer and a Transfer of Registry Fee of One Dollar accompanies such notice.

WELDING AND CUTTING OUTFITS

SMITH'S "AIRLINE"



This outfit features the new feather light "Airline" welding torch and cutting assembly. It's a complete outfit for use in Aircraft manufacture and repair, auto body shops, sheet metal shops and many other places where a small, light torch is needed. It is also ideal for use as a "second" torch in shops which specialize in heavy work, but have frequent need for a small torch for light work.

The torch body is 5¾ in. long over all and weighs only 6 oz. Sixty degree placement of valves at forward end of torch body lends itself to one hand control of flame adjustment.

Welding tips and cutting assembly are manufactured to Smith's new slip-in design and may be swiveled in any direction even when the flame is lighted. Positive gas tight seal is made without the use of a wrench so changing from one tip to another or from welding to cutting is done in a few seconds.

Smith's exclusive "Flo-Trol" feature confines each gas through its proper channel thus eliminating premixing of gases, popping and other conditions which might lead to a back-fire with its incidental damage.

The complete outfit includes one each welding tips Nos. AW21, AW23, AW25, AW27 and AW29 covering a range from light metal up to ¼ in. thick.

The "Airline" cutting assembly has one tip No. MC2-4 capable of cutting steel up to ⅝ in. in thickness. The 80° angle head cutting assembly is furnished with the outfit but a 90° angle assembly is available if desired.

Complete Outfit Includes

	Each
1—No. AS120 "Airline" welding torch body with 5 tips, case and cleaners	$26.00
1—No. AC218 "Airline" cutting assembly with No. MC2-4 tip, No. N210 wrench and cleaner	23.00
1—No. H100C BB oxygen regulator	25.00
1—No. H101J BB acetylene regulator	22.50
1—No. RA131-25 ft. length $\frac{3}{16}$ in. acetylene hose	4.60
1—No. RA231-25 ft. length $\frac{3}{16}$ in. oxygen hose	4.60
1 Pair—No. N107 goggles	2.50
1—No. N113 torch lighter	.35

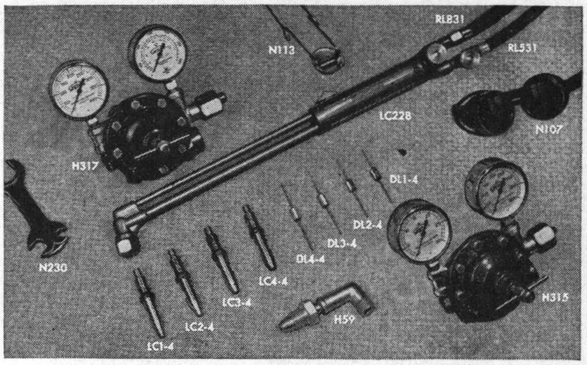
	Per outfit
No. **AS318**—Complete outfit comprising all parts enumerated above; wt. per outfit 24 lbs.	$108.55
*No. **AS338**—Same as No. AS318 but without BB acetylene regulator; wt. per outfit 19 lbs.	86.05
No. **AS319**—Same as No. AS318 but with 90° head cutting assembly instead of 80°; wt. per outfit 24 lbs.	108.55
*No. **AS339**—Same as No. AS319 but without BB aceylene regulator; wt. per outfit 19 lbs.	86.05

One outfit in a box.

*An acetylene regulator is not necessary when the outfit is used with an acetylene generator.

CUTTING OUTFITS

SMITH'S "LIFETIME" HEAVY DUTY



For Heavy, Prolonged Cutting Jobs

This outfit shows up to best advantage on tough cutting jobs. It is used for all types of manual cutting operations in steel mills, shipyards, foundries, scrap iron yards—any place where a torch must give top performance under difficult conditions. The equipment is especially designed to pass oxygen at high pressures and in ample volume required for heavy and continuous cutting. The torch itself is ruggedly constructed to provide maximum trouble-free service.

The "Lifetime" cutting torch is regularly furnished with 80° angle head and latched button for control of the oxygen cutting jet.

The standard outfit has four cutting tips Nos. LC1-4, LC2-4, LC3-4 and LC4-4 with a range from ⅛ to 4 in. steel. Patented construction features assure fast, economical cuts. Additional tip sizes for heavier cutting are available plus special types for gouging, rivet cutting, scarfing and light metal cutting.

Type BB-2 (two-stage) regulators are furnished with the outfit because of their ability to accurately maintain the required outlet pressure until the cylinders are nearly empty. For lighter cutting and intermediate jobs, the single stage Type BB regulators do an excellent job.

Complete Outfit Includes

	Each
1—No. LC238 Lifetime button type cutting torch with 4 tips, wrench, case and cleaners	$55.90
1—No. H317—Type BB-2 Oxygen cutting regulator with gauges	34.00
1—No. H315—Type BB-2 Acetylene regulator with gauges and H59 adapter	31.50
1 Pair—No. N107 goggles	2.50
1—No. N113 torch lighter	.35
1—No. RL531—25 ft. length ¼ in. 2 braid acetylene hose	5.60
1—No. RL831—25 ft. length ¼ in. 3 braid oxygen hose	7.10

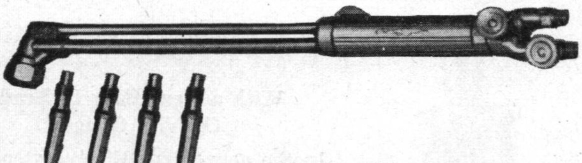
	Per outfit
No. **LS368**—Complete outfit comprising all parts enumerated above; wt. per outfit 34 lbs.	$136.95
*No. **LS388**—Same as No. LS368 but without Type BB-2 acetylene regulator; wt. per outfit 29 lbs.	105.45
No. **LS358**—Same as No. LS368 but with Type BB regulators; wt. per outfit 31 lbs.	118.95
*No. **LS378**—Same as No. LS358 but without Type BB acetylene regulators; wt. per outfit 26 lbs.	96.45
No. **LS369**—Complete with BB-2 regulators and 90° head torch; wt. per outfit 34 lbs.	136.95
*No. **LS389**—Same as No. LS369 but less Type BB-2 acetylene regulator; wt. per outfit 29 lbs.	105.45
No. **LS359**—Complete with Type BB regulators and 90° head cutting torch; wt. per outfit 31 lbs.	118.95
*No. **LS379**—Same as No. LS359 but less Type BB acetylene regulator; wt. per outfit 26 lbs.	96.45

One outfit in a box.

*An acetylene regulator is not necessary when the outfit is used with an acetylene generator.

CUTTING TORCHES

SMITH'S "LIFETIME GUARANTEE"



Button Type

Over Lever Type

Button or lever types which are identical except for the means of controlling the oxygen jet. The button on torch No. LC238 may be latched in the open position for continuous cuts.

Designed for heavy cutting up to 12 in. or more in thickness but the four tips regularly supplied have a range from ⅛ in. to 4 in. steel. A wide variety of tips as listed below are available. The particular ability of these torches to withstand intense, reflected heat maks them especially favored for work in confined places.

80° angle head torches are illustrated above, but they come with 90° angle heads too. Unless otherwise specified, the 80° head button type torch is supplied as standard. Both types protected by Smith's Lifetime Guarantee.

Button Type Torches

	Each
No. **LC238**—80° angle head; included in outfit No. LS368; with four cutting tips Nos. LC1-4, LC2-4, LC3-4, LC4-4, Universal wrench, dual tip cleaners and tip case	$55.90
No. **LC228**—80° torch only	37.00
No. **LC239**—90° torch with four tips, wrench, cleaners and case	55.90
No. **LC229**—90° torch only	37.00

Over Lever Type Torches

	Each
No. **LC268**—80° torch with four tips Nos. LC1-4, LC2-4, LC3-4, LC4-4, Universal wrench, dual tip cleaners and tip case	$55.90
No. **LC258**—80° torch only	37.00
No. **LC269**—90° torch with four tips, wrench, cleaners and case	55.90
No. **LC259**—90° torch only	37.00

Average weight each 3½ pounds.

One in a box.

Under Lever Type Torches

	Each
No. **LC288**—80° torch with four tips Nos. LC1-4, LC2-4, LC3-4, LC4-4, Uuiversal wrench, dual tip cleaners and tip case	$55.90
No. **LC278**—80° torch only	37.00
No. **LC289**—90° torch with four tips, wrench, cleaners and case	55.90
No. **LC279**—90° torch only	37.00

CUTTING TIPS

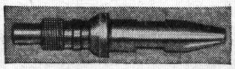
SMITH

For "Lifelong" and "Lifetime" Cutting Assemblies, and for "Lifetime" Cutting Torches

Because of patented construction features, Smith's cutting tips are most economical in gas consumption. They are swaged of hard-drawn copper by a special process assuring clean, unobstructed gas passages. Lower gas consumption and greatly reduced cost per cut is the direct result.

Preheating flames converge toward the center cutting jet so that a smaller area is heated, resulting in faster starting of cuts. The annular orifice in the mixing area makes certain that preheat flames are always of equal length and that gases are properly and thoroughly mixed.

Each tip has one fixed seat which makes contact in the bottom of the head. A movable seat on each tip forms a gas-tight seal with the outer end of the torch head when head nut is tightened securely.



Four Preheat Hole Cutting Tips

For general cutting of steel. Available in size Nos. LC0-4, LC1-4, LC2-4, LC3-4, LC4-4 covering a cutting range from 3/32 to 4 in.

	Each
All sizes—Av. wt. each 3¾ oz.	$3.75

Six Preheat Hole Cutting Tips (Short)

For faster cutting of steel either manually or in cutting machines when Smith's machine type cutting torch is used. Also ideal for cutting dirty or rusty metal. Available in size Nos. LC0-6, LC1-6, LC2-6, LC3-6, LC4-6, LC5-6 and LC6-6, covering a range from 3/32 to 12 in. Use only up to size LC4-6 in cutting assemblies. Tips are 3⅝ in. long.

	Each
All Sizes—Av. wt. each 3⅝ oz.	$3.75

Six Preheat Hole Cutting Tips (Long)

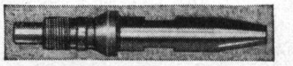
Same as above except 7/16 in. longer for greater resistance to heat in heavy or prolonged cutting. Made in size Nos. LC11-6, LC12-6, LC13-6, LC14-6, LC15-6, LC16-6. Range 3/16 to 12 in. Use only up to size LC14-6 in cutting assembly.

	Each
All Sizes—Av. wt. each 4 oz.	$3.75

Six Preheat Hole Tips for Cutting Cast Iron

Cast iron cutting requires the extra preheat and cutting jet capacities which these tips provide. In sizes Nos. LC21-6, LC22-6, LC23-6, LC24-6, LC25-6 and LC26-6. Cutting range ½ to 10 in. Use only up to LC23-6 in cutting assemblies.

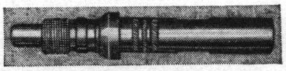
	Each
All Sizes—Av. wt. each 4 oz.	$3.75



Propane Gas Cutting Tip

Consume propane or other petroleum derivative gases instead of acetylene and are for general cutting of steel. Size Nos. LC31-0, LC32-0, LC33-0, LC34-0, LC35-0 and LC36-0, covering a cutting range from ⅛ to 12 in. The fuel gas must be delivered to the torch at a pressure of 5 lbs. or more. Use up to size LC34-0 in cutting assemblies.

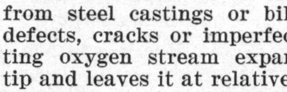
	Each
All Sizes—Av. wt. each 3½ oz.	$3.75



Scarfing and Rivet Burning Tip

Used for removal of rivets, and areas from steel castings or billets containing defects, cracks or imperfections. The cutting oxygen stream expands within the tip and leaves it at relatively low velocity, giving it the "washing" effect necessary for this type of work.

	Each
No. **LC66-0**—Wt. each 4 oz.	$4.50

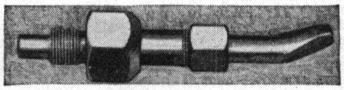


Step Type Tip for Cutting Light Gauge Metal

	Each
No. **LC61-0**—For cutting 24 to 14 ga. steel; wt. each 5 oz.	$4.50
No. **LC62-0**—For cutting 18 ga. to ⅛ in. steel; wt. each 5 oz.	4.50

Replacement Tip End and Nut

	Each
No. **LC61-1**—For LC61-0	$2.25
No. **LC62-1**—For No. LC62-0	2.25



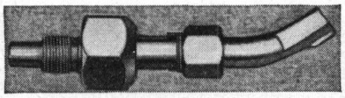
Rivet Cutting Tips

Designed to burn the heads off rivets flush with the plate. Particularly useful in boiler repair or remodeling because the rivet head can be quickly removed without injury to the plates.

	Each
No. **LC51-0**—For up to ½ in. rivets; wt. each 5 oz.	$4.50
No. **LC52-0**—For up to ¾ in. rivets; wt. each 5 oz.	4.50

Replacement Tip End and Nut

	Each
No. **LC51-1**—For No. LC51-0	$2.25
No. **LC52-1**—For No. LC52-0	2.25



Gouging Tips

For removal of old welds, veeing out preparatory to welding, groove cutting and gouging of all kinds.

Nos.	Each	Gouge depth, in.
LC41-0	$10.25	⅛ to ¼
LC42-0	10.25	¼ to ⅜
LC43-0	10.25	3/16 to 7/16

Replacement Tip End and Nut

Nos.	Each	For Tip, Nos.
LC41-1	$8.00	LC41-0
LC42-1	8.00	LC42-0
LC43-1	8.00	LC43-0

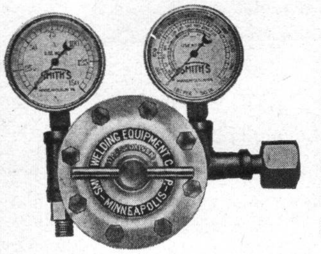
Note—In ordering tips, be sure to specify size number wanted.

CUTTING REGULATORS

SMITH

Used in "Lifetime" Cutting Outfits

Type BB-2—Oxygen



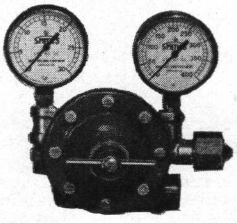
Two-stage, used in cutting outfits Nos. LS368, LS388,, LS369, LS389. Green bonnet. Has ample capacity for all types of cutting. Equipped with automatic spring loaded safety relief valve on second stage. Has 2½ in. 400 lb. and 3000 lb. gauges. Inlet fits standard oxygen cylinder valves. Outlet has $\frac{9}{16}$ in.-18 right-hand male thread.

	Each
No. H317—Complete with gauges; wt. each 6¾ lbs.	$34.00
No. H316—Without gauges; wt. each 5⅝ lbs.	26.00

Type BB-2—Acetylene

Two-stage; used in cutting outfits Nos. LS368 and LS369. Red bonnet. Has 2½ in. 30 lb. and 400 lb. gauges. Inlet fits Airco No. 4 and No. 5 cylinders but H59 adapter is furnished for use when regulator must be attached to cylinder having female type of outlet valve. Outlet has $\frac{9}{16}$ in.-18 left-hand male thread.

	Each
No. H315—Complete with gauges; wt. each 7¼ lbs.	$31.50
No. H314—Without gauges; wt. each 6 lbs.	26.00



Type BB—Oxygen

Single stage; used in cutting outfits Nos. LS358, LS378, LS359 and LS379. Green bonnet. Has 2½ in. 400 lb. and 3000 lbs. gauges. Automatic, spring loaded safety relief valve. Inlet connection fits standard oxygen cylinder valves. Outlet has $\frac{9}{16}$-18 right-hand male thread.

	Each
No. H102—Complete with gauges; wt. each 5¼ lbs.	$25.00
No. H99—Without gauges; wt. each 3⅞ lbs.	17.00

Type BB—Acetylene

Single stage; used in cutting outfits Nos. LS378 and LS379. Red bonnet. Supplied with 30 lb. and 400 lb. 2½ in. diameter gauges. Inlet fits Airco No. 4 and No. 5 Acetylene cylinders but H59 adapter is furnished so that regulator may be used on cylinder having female type of outlet valve. Outlet has $\frac{9}{16}$ in.-18 left-hand male thread.

	Each
No. H1010—Complete with gauges; wt. each 5⅝ lbs.	$22.50
No. H98—Without gauges; wt. each 4 lbs.	17.00

All above, one in a box.

CUTTING HOSE ASSEMBLIES

SMITH

Used in "Lifetime" Cutting Outfits

Three Braid Oxygen Hose

Designed for high oxygen pressures. Used in all cutting outfits. Has No. R11 connections on each end which fit oxygen regulator outlet, and oxygen inlet on "Lifetime" and other large torches.

	Per length
No. RL831—¼ in.; 25 ft. length; wt. per length 305 lbs.	$7.10

Two Braid Acetylene Hose

With No. R12 connections on each end. Used in all cutting outfits. Fits acetylene regulator outlet, and acetylene inlet connection on Lifetime cutting torches and other torches which have ¼ in. left hand male hose connection thread.

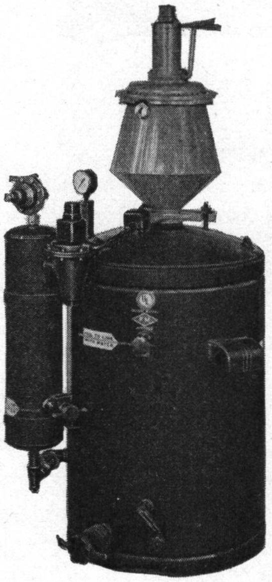
	Per length
No. RL531—¼ in.; 25 ft. length; wt. per length 3 lbs.	$5.60

Open stock.

Note—We stock Manhattan welding hose; refer to index.

PORTABLE ACETYLENE GENERATORS

SMITH "TYPE K" TWO STAGE



With a New, Easy to Read Carbide Gauge

In the new "Type K" Acetylene Generator Smith's engineers have again made important progress toward more efficient and economical production of Acetylene gas for welding and cutting. A new carbide gauge that's as easily read as the gasoline gauge on your car, takes all the guess work out of determining the amount of carbide remaining in the hopper. A calibrated dial is plainly visible through a gas tight window, so that at a glance you know exactly what portion of the carbide hopper capacity remains to be used.

Another mighty important new feature is an outlet regulator that removes all pressure fluctuations and delivers acetylene to the torch at perfectly controlled and uniform pressure.

An automatic, non-mechanical air lift pump completely circulates all water in the generating chamber so that it is of uniform temperature throughout. It eliminates the "hot Belt" at the waterline and actually reduces the operating temperature of the generator. It provides 50% greater distance between carbide feed and water level to eliminate the possibility of clogged feeding mechanism.

This combination of advantages produces double "scrubbed" gas that is cool and free of impurities. Maximum flame temperature is the result.

Safe, Efficient Two-Stage Design

Smith's "Type K" Generator is the carbide to water type. Carbide is held in the hopper and fed into the water below by a large diaphragm mechanism. Acetylene is generated under 13 lbs. pressure and delivered to the torch at pressure of 11 lbs. The gas passes though the water circulator where it is amply washed and cooled. It then passes into the filter tank (which also serves as a hydraulic back pressure valve), through the outlet regulator and out into the hose. This is a two-stage generator in every sense of the word.

Complete safety is assured by the use of a combination filter tank and hydraulic back pressure valve, an efficient check valve between the filter tank and generating chamber, and an automatic safety relief valve. All three sizes are listed as approved for portable use by Underwriters' Laboratories, Inc., and Factory Mutual Laboratories, and may be operated at double rating as indicated on the name plate.

Use size 14 ND carbide.

Nos.	K1615	K1630	K1650
Size, lbs.	15	30	50
Diam. shell, in.	18	21	24
Height over all, in.	48	58	67
Carbide capacity, lbs.	15	30	50
Water capacity, gals.	17	33	55
Max. rated cap. per hour, cu. ft.	30	60	100
Net wt. each, lbs.	155	170	185
Shipping wt. each, lbs.	195	215	250
Each	$150.00	167.00	187.00

One in a box.

Note—For carbide refer to index.

WELDING AND BRAZING FLUXES

SMITH'S A-MAL-GAM No. N1

Smith's
A-MAL-GAM
For welding or brazing cast iron
N 1

For Bronze Welding at Low Temperature

A black flux which forms a perfect bond between cast iron and bronze and enables the operator to quickly repair cast iron parts such as cylinder heads, crank cases, boilers and gears without the necessity of preheating.

May also be used for fusion welding of cast iron.

	Per pound
No. N1—In 1 lb. moisture proof can	$1.50

SMITH'S A-MAL-GAM No. N2

Smith's
A-MAL-GAM
For welding cast iron with bronze
N 2

For Bronze Welding at High Temperature

A red flux which makes strong welds in cast iron with bronze welding rod.

Forms a perfect bond even though cast iron is overheated. Sticks to the welding rod, makes the metal flow freely and leaves a clean weld with a bright surface.

Also used for brazing steel and malleable iron or joining two dissimilar metals.

	Per pound
No. N2—In 1 lb. moisture proof can	$1.25

SMITH'S A-MAL-GAM No. N3

Smith's
A-MAL-GAM
For steel, malleable, copper and brass
N 3

For All Kinds of Brazing

A cream-colored flux used in brazing steel, malleable iron, brass, copper and galvanized iron. It causes the welding rod to flow freely at low temperatures and leaves a clean, bright surface.

	Per pound
No. N3—In 1 lb. moisture proof can	$0.75

SMITH'S CAST IRON FLUX

Smith's
CAST-IRON
For fusion welding of cast iron
FLUX

A dark red granular flux, powerful and quick acting, for fusion welding of cast iron rod. Dissolves the oxide and slag present in cast iron and floats it to the surface of the puddle where it cannot cause hard spots or blow holes in the weld.

	Per pound
No. N41—In 1 lb. moisture proof can	$0.60

One Pound
Anti-Borax
WELDING
FLUX

ANTI-BORAX

Welding fluxes prevent oxidation, eliminate blow holes, etc. Brazing fluxes cause spelter to penetrate deeper into joint.

One Pound
Anti-Borax
BRAZING
FLUX

		Per pound	
No.	Description	1-lb. Can	5-lb. Can
1	Cast iron welding flux	$0.50	$0.45
2	Brazing flux, for brass, bronze, steel, malleable iron, etc.	.55	.50
3	Brass or bronze welding flux	.55	.50
7	Steel welding flux	.75	...
9	Stainless steel flux for steel containing chromium, copper or nickel	2.00	...

			Each	
No.	Description	¼-lb. Can	½-lb. Can	1-lb. Can
5	Extra quality cast aluminum welding flux	$0.65	$1.25	$2.25
4	Braz-cast flux for bronze welding cast iron	...	.75	...
*8	"A.B.C." sheet and wrought aluminum welding flux	.65	1.25	2.25

*No. 8 is furnished in bottles instead of in cans.

WELDING AND BRAZING FLUXES

OXWELD

Oxweld
FERRO FLUX
Oxweld Acetylene Company

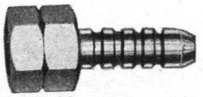
	Per pound
Ferro Flux—For cast iron; 1 lb. can	$0.90
Brazo Flux—For brass, bronze, copper or malleable iron	1.00

Aluminum Flux

Size cans, lb.	¼	1
Per can	$0.75	3.20

WELDING HOSE CONNECTIONS

SMITH'S



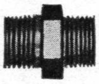
All Brass

	Each
No. R-11—Joins ¼ inch oxygen hose to regulators and "Life-long" and "Lifetime" welding torches	$0.30
No. R-12—Joins ¼ inch acetylene hose to regulators and "Lifelong" and "Lifetime" torches	.30
No. R-13—Joins 3/16 inch oxygen hose to the "Airline" and other torches using ⅜ in.-24 right hand male thread	.30
No. R-13D—Joins 3/16 inch acetylene hose to regulators and "Lifelong" and "Lifetime" welding torches	.30
No. R-14—Joins 3/16 inch acetylene hose to the "Airline" and other torches using ⅜ in.-24 left hand male threads	.30
No. R-14D—Joins 3/16 inch acetylene hose to regulators and "Lifelong" and "Lifetime" welding torches	.30

HOSE UNIONS

SMITH'S

	Each
No. R-20—One end fits into 3/16 inch inside diameter hose, other end screws into nut of connection Nos. R-11 and R-13D	$0.30
No. R-21—One end fits into 3/16 inch inside diameter hose, other end screws into nut of connections Nos. R-12 and R-14	.30



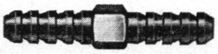
For Joining Two Lengths of Hose Equipped With Connections

Threaded both ends.

	Each
No. R-18—Fit connections Nos. R-11 and R-13D	$0.30
No. R-19—Fit connections Nos. R-12 and R-14D	.30
No. R-41—Fit connection No. R-13	.30
No. R-42—Fit connection No. R-14	.30

HOSE SPLICERS

SMITH'S



For Joining Two Lengths of Hose Without Connections

	Each
No. R-15—Joins ⅜ in. ID hose	$0.30
No. R-16—Joins ¼ or 5/16 in. ID hose	.30
No. R-16A—Joins 3/16 in. hose	.30

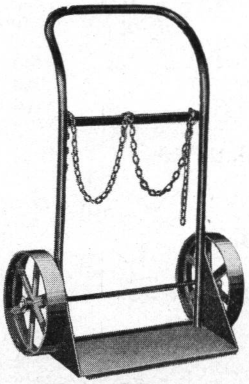
HOSE CLAMPS

SMITH'S

Nos.	**R-35**	**R-36**	**R-37**
For hose, ID, in.	3/16	¼ or 5/16	⅜
Each	$0.10	.10	.10

CYLINDER TRUCKS

SMITH'S



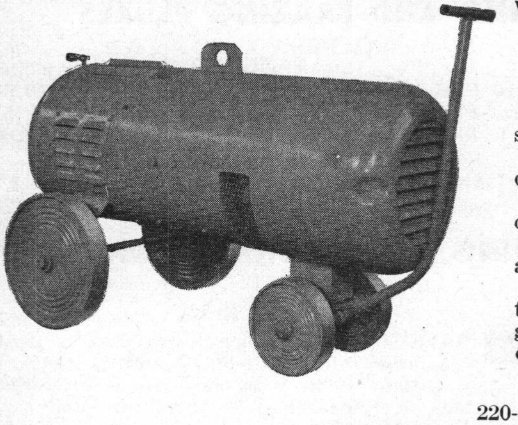
All Steel, Welded

Cylinder held in place by steel chains. With this truck the welding outfit can easily and quickly be moved from job to job without fear of tipping cylinders, or injuring regulators.

24x10 in. platform.

Nos.	Each	Diam. wheels, in.	Wt. each, lbs.
NE614	$17.50	14	44
NE630	22.50	30	65

All above, open stock.



WESTINGHOUSE DC ELECTRIC WELDERS

FLEXARC, MOTOR DRIVEN

AC Motor Drive; For Low Cost Heavy Duty Welding

Motor, welding generator, and motor control mounted in a drip-proof seamless steel frame; louvered for adequate ventilation.

All sets rated strictly in accordance with NEMA standard on the basis of 60% duty cycle, 40 load volts.

Motors carry rated load with temperature rise not exceeding 50° C. Generators carry rated load with temperature rise not exceeding 70° C.

Generator, armature and motor rotor mounted on single shaft; dynamically balanced; sealed ball bearings.

The AC motor driven welder is equipped with push button operated De-ion contactor for motor starting. Low voltage protection is provided on starter, and a thermoguard mounted in motor stator windings provides overload protection. Dual voltage coil permits changing from 220 to 440 volts or vice versa without changing dial.

AC Motor Driven, Stationary

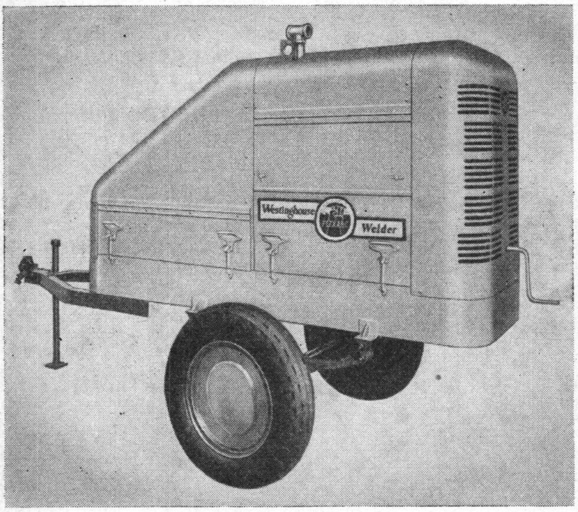
220-440 volts, 2 or 3 phase; 550 volts, 3 phase.

Cycles	Each	RPM	Length, in.	Height, in.	Width, in.	Net wt. ea., lbs.
200 Ampere—40-250 Ampere Range						
60	$409.00	1750	48 7/16	27½	21½	1101
50	427.00	1450	48 7/16	27½	21½	1101
25	526.00	1450	50 3/16	27½	21½	1252
300 Ampere—60-375 Ampere Range						
60	$458.00	1750	54 11/16	27½	21½	1278
50	506.00	1450	54 11/16	27½	21½	1278
25	551.00	1450	56 7/16	27½	21½	1430

Cycles	Each	RPM	Length, in.	Height, in.	Width, in.	Net wt. ea., lbs.
400 Ampere—80-500 Ampere Range						
60	$521.00	1750	55⅜	29	23¼	1507
50	574.00	1450	55⅜	29	23¼	1507
25	632.00	1450	56⅞	29	23¼	1710

Portable Models—4 solid steel disc wheels and towing handle; add 83 lbs. to weights of stationary models—add to price of stationary models $18.00

FLEX-ARC DC, ENGINE DRIVEN



200, 300, 400 Amperes—Gasoline Engine Driven 300 Amperes Diesel Engine Driven

Rugged field service heavy duty welders for use where electric power is not available.

The generators have the same features as in the motor driven sets above.

Engine and generator mounted on all welded steel bed; sturdy steel housing of heavy construction. Hinged side and end covers provide easy access to all parts. Heavy duty radiators of ample capacity will cool engine in ambient temperatures as high as 110° F.

All ratings equipped with an Electro-Hydraulic idler for adjustable, positive gas saving control of engine idling speed. Adjustable timing allows engine to run at rated speed for any desired time up to several minutes before dropping to idling speed.

Battery ignition with push button starting standard on 200 and 300 ampere welders. Magneto ignition with hand crank starting on 400 ampere welder.

Ampere rating at 400 volts—1 hour 70°.

Stationary Model

Amperes	Each	Ampere range	Engine	HP at 1500 RPM	Net wt. each, lbs.
200	$ 985.00	40-250	Chrysler IND-5	51	1975
300	1090.00	60-375	Chrysler IND-5	51	2200
300	2058.00	60-375	G-M Diesel 2-71	..	2930
400	1216.00	80-500	Chrysler IND-8	58	2310

Portable Models

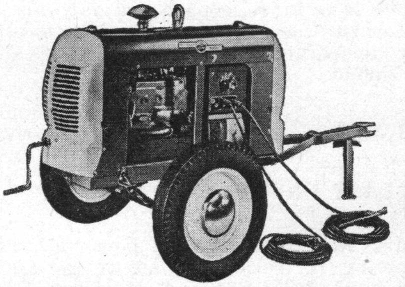
Spring mounted, with pneumatic tires.

Type	Add to above lists	Add to above wt., lbs.
2-wheel	$184.00	260
4-wheel	243.00	580

Overall Dimensions in Inches

Amperes	Length		Height over eye bolt		Width	
	Over frame	Over frame and torque	Sta.	Port.	Sta.	Port.
200	87	115	50	71	27	64½
300	90	118	50	71	27	64½
300 Diesel	90	118	50	71	27	64½
400	90	118	50	71	27	64½

FLEXARC "RANGER," ENGINE DRIVEN



30-250 Amperes NEMA Rated

A small lightweight welder capable of making "shop" quality welds on field jobs where electric power is not available.

The generator is directly coupled to a Hercules Model 1XB3 4 cylinder engine. Engine and generator assembled on a heavy welded steel base and enclosed in a sheet steel drip-proof enclosure with partially open sides.

Generator Rating—200 amperes, 30 volts, 50% duty cycle, without exceeding 70° C temperature rise. Current range 30 amperes at 20 load volts to 250 amperes at 30 load volts.

Portable model has two-wheel spring mounted running gear with pneumatic tires for high speed towing service.

	Each
Portable Model—62 in. long over end guards, 107 in. long over all, 53½ in. wide over all, 16⅝ in. welding set width, 5½ in. high over all; net wt. each 1061 lbs. ..	$853.00
Stationary Model—34½ in. high over all; shipping wt. each 871 lbs.	734.00

DC WELDER ACCESSORY PACKAGES

Contents

1—30 ft. electrode lead
1—Electrode holder
1—30 ft. work lead
1—High grade helmet with lens
1—Wire scratch brush

"Ranger" Accessory Package contains a 16 ft. electrode lead, a 16 ft. work lead and approximately 11¼ lbs. of assorted electrodes.

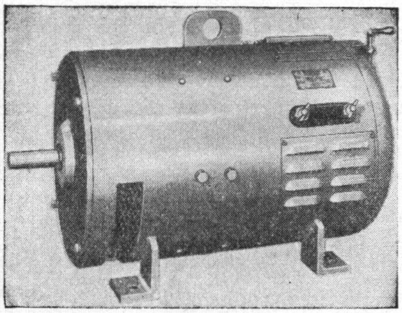
For Welders, Amps.	"Ranger" 200	200	300	400
Wt. package, lbs.	36	36	36	36
Per package	$25.00	30.00	40.00	50.00

Note—Add 10% to net weights of all welders for approximate shipping weights.

All above, open stock.

ELECTRIC WELDERS

WESTINGHOUSE FLEXARC DC GENERATORS



Type SCF—Stationary, Single Operator; 200, 300, 400 Amperes

A complete, self-contained unit for coupled or belted service. For applications in welding shops using line-shaft drives; for making field welding units by utilizing truck or tractor power take-off, or for building stationary or portable welders utilizing electic motor or gasoline engine to drive the generator.

Requires no field rheostat, exciter or external reactor.

Rated strictly in accordance with NEMA standards. They have Class B insulation and are rated on the basis of 60% duty cycle, continuously, at rated load, with temperature rise not exceeding 70° C.

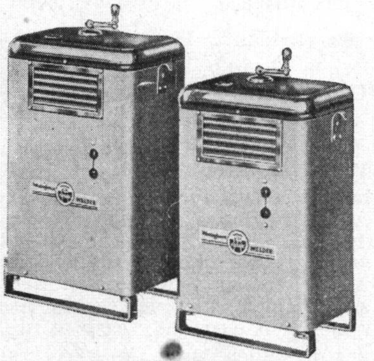
Positive polarity control is provided by polarity control coil wound in the generator field. The coil must be excited by 6 volts direct current. The battery charging generator which is part of every engine assembly may be used for this purpose, or a six-volt battery will suffice. Small switch provided to reverse polarity when desired.

Load voltage 40; 1 hour 70° C; 1450 RPM.

Amperes	Each	Ampere range	Recommended rating of driving unit AC or DC motor	Recommended rating of driving unit Gasoline Engine	Length, in.	Height, in.	Width, in.	Wt. each, lbs. Net	Wt. each, lbs. Shipping
200	$321.00	40–250	15 HP	30 BHP	34⅞	24⅛	20	820	900
300	354.00	60–375	20 HP	40 BHP	39¼	24⅛	20	950	1045

FLEXARC "65" LINE, AC

With Built-in Power Factor Correction



No. HC-C Duplex

AC welders are replacing DC welders in the modern welding shops and industrial plants because 4 times out of 5 AC welding can do the job faster, cheaper and better.

AC welding means easier welding. For there are no complicated controls to continually readjust as generally encountered with rotating machines. Once pre-set for the proper welding current the machine can be forgotten by the operator. AC welding provides 30% higher over all efficiency—cutting costs to a minimum. AC welding eliminates troublesome arc blow common to DC welders—assuring easier arc control and sounder welds.

Rugged steel frame and removable enclosure, lifting hooks. Bottom fitted with heavy metal mesh to protect inner parts from injury.

Basis of Rating—Flexarc "65" Welders are rated in accordance with NEMA Standards for Industrial Type, Single-Operator Transformer Type Arc Welders. In accordance with these standards the Flexarc "65" Welders, when operated at rated amperes, and load voltage on a resistance load at 60% duty cycle until constant temperatures are attained but for period not exceeding four hours will have a temperature rise not exceeding 90° C measured by the resistance method. These welders may be operated at the maximum specified welding current and rated low voltage, at 35% duty cycle with approximately the same temperature rise as specified for rated amperes and duty cycle.

Stationary Model

60 cycles; 40 rated load volts; primary power factor at rated load 80%; efficiency at rated load 91%.

Model	Each	Rated amps.	Primary volts	Welding current range	Primary amps. at rated load 220V	Primary amps. at rated load 440V	Primary amps. at rated load 550V	Primary KVA at rated load	Height, in.	Width, in.	Depth, in.	Net wt. each, lbs.
HC-C	$290.00	200	440/220	49–250	51	25.5	20.4	11.2	36	19¼	16¼	320
HC-CR	376.00	200	440/220	40–250	51	25.5	20.4	11.2	36	23½	16¼	360
HC-C	328.00	300	440/220	60–375	73	36.5	29	16.1	39½	21	16¼	440
HC-CR	414.00	300	440/220	60–375	73	36.5	29	16.1	39½	27¼	16¼	550
HC-C	434.00	400	440/220	80–500	102	51	41	22.4	42¾	22¼	16¼	560
HC-CR	520.00	400	440/220	80–500	102	51	41	22.4	42¾	28½	16¼	620
HC-C	528.00	500	440/220	100–625	122	61	49	26.8	49⅞	22¼	16¼	560
HC-CR	614.00	500	440/220	100–625	122	61	49	26.8	49⅞	28½	16¼	620
HC-C Duplex	585.00	300/600	440/220	60–375 singly 120–750 in parallel	146	73	58	32.2	....	....	....	880

Note—550/440 volt available in rated sizes at same price.

Portable Model—Running gear consists of four 5 in. swivel mounted wheels—Add to above prices $15.00

Special 50 Cycle Rating—Although standard 60 cycle models can be used on 50 cycle circuits without overheating, specially designed machines are available for 50 cycles.

AC WELDER ACCESSORY PACKAGES

Contents

- 1—30 ft. electrode lead
- 1—Fully insulated electrode holder
- 1—25 ft. work lead
- 1—High grade helmet with lens and cover glass
- 1—Wire scratch brush

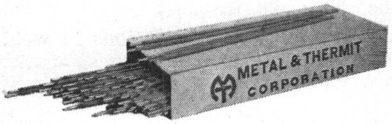
Package for 200 ampere welders contains a 16 ft. electrode lead, 16 ft. work lead and approximately 11⅕ lbs. of assorted electrodes.

For welders, amps.	**200**	**300**	**400**	**500**
Wt. package, lbs.	35	35	35	35
Per package	$25.00	40.00	50.00	50.00

All above, open stock.

ARC WELDING ELECTRODES

M & T



For many years the Metal and Thermit corporation has been a leader in the welding industry, including among its achievements the commercial development of the Thermit welding process and the perfection of Murex arc welding electrodes. The latter, an extensive line of the highest quality welding rods, are considered by important fabricators throughout the United States to be the finest electrodes available.

ELECTRODE GUIDE

Application—Mild Steel

Type of work	Electrode recommended	AWS grade
All position—DC—reverse polarity	Type R	E6010
General purpose—AC or DC—straight or reverse polarity	Type A	E6011
General purpose—DC—straight polarity—or AC	Genex	E6012
General purpose—DC straight or reverse polarity—or AC	Type U	E6013
All position—AC or DC—straight polarity	Alternex	E6013
High carbon, sulphur-bearing and cold-rolled steels—all position—AC or DC	Type HTS	E6015
Downhand butts or fillets—AC or DC ...	Type FHP	E6020

Application—Cast Iron

Type of work	Electrode recommended	AWS grade
Repair and building-up	Ni-Rod	None

Application—Hard Surfacing and Building-Up

Type of work	Electrode recommended	AWS grade
Hard surfacing, approximately 250 Brinell..	Hardex 25	None
Hard surfacing, approximately 450 Brinell..	Hardex 45	None
Hard surfacing, approximately 600 Brinell..	Hardex 60	None

MILD STEEL ELECTRODES
Murex Type R; E-6010

Gray covering; plain tip. AWS-ASTM Grade E-6010.

Type R is recommended for a variety of applications which require the use of a high quality Grade E-6010 electrode. It is an all position DC reverse polarity electrode having outstanding performance characteristics and providing sound X-ray clean deposits. It has excellent arc stability, produces a minimum of splatter and yields a slag which is exceptionally easy to remove.

Standard package 50 lbs.

3/32 to 5/16 in. diam. See prices below.

Murex Genex; E-6012

Genex is widely used in fabrication and maintenance. Ease of handling in all positions make it a useful all-around electrode. Readily bridges gaps between plates where fit-up is poor. Economical for single pass horizontal fillets. Limited penetration helpful in welding light sections, high-carbon, and many low-alloy steels. Dilution of weld with carbon and other alloying ingredients slight, minimizing danger of cracking.

Standard package 50 lbs.

3/32 to 5/16 in. diam. See prices below.

Murex Type A; E-6011

Light tan covering, plain tip with blue spot. AWS-ASTM Grade E-6011, AC or DC.

Type A is for flat, vertical or overhead welding with AC on mild steel plates, shapes and castings where clean, high quality weld metal is required. For example: in welding structural steel for buildings and bridges; in shipbuilding and marine welding of all kinds, including galvanized work; in fabrication of piping, pressure vessels, gear guards, storage tanks and countless items made of both heavy and light plate.

Standard package 50 lbs.

3/32 to ¼ in. diam.

Murex Type R; Murex Genex; Murex Type A
Price Per Pound

Size, in.	Less than std. pkg.	50 to 200 lbs.	500 to 950 lbs.
3/32x12	$0.33	$0.165	$0.155
⅛x14	.21	.105	.10
5/32x14	.21	.105	.10
3/16x14	.21	.105	.10
7/32x18	.21	.105	.10
¼x18	.22	.11	.10
5/16x18	.22	.11	.10

MILD STEEL ELECTRODES
Murex Type FHP; E-6020

Brown covering; blue and AWS-ASTM Gade E-6020. AC or DC.

Type FHP is for groove and fillet welding in the flat positions as well as for producing horizonal fillets and cover beads. In combination with the use of welding positioners to provide work in the flat position. Type FHP assures low cost in heavy weldments and is used in most of the country's important fabricating plants producing heavy equipment, machine frames, bases, housings, diesel engine frames and beds, boilers, tanks and pressure vessels built to code requirements, particularly when x-ray inspection is required.

Standard package 50 lbs.

⅛ to 5/16 in. diam.

Price Per Pound

Size, in.	Less than std. pkg.	50 to 200 lbs.	500 to 950 lbs.
⅛x14	$0.27	$0.135	$0.125
5/32x14	.25	.125	.115
3/16x14	.23	.115	.105
7/32x18	.23	.115	.105
¼x18	.26	.11	.10
5/16x18	.26	.11	.10

Murex Type HTS; E-6015

Gray covering; plain tip with purple spot. AWS-ASTM Grade E-6015.

Because of its high freedom from underbead cracking, Type HTS finds wide use on high sulphur, high carbon, and cold rolled steels. Type HTS was first to weld successfully the high sulphur, free-machining dies used for plastics and rubber goods. In car building. HTS welds high carbon spring steel wear plates to mild steel bolsters. For many uses, Type HTS replaces costly stainless electrodes.

Standard package 50 lbs.

3/32 to 5/16 in. diam.

Price Per Pound

Size, in.	Less than std. pkg.	50 to 200 lbs.	500 to 950 lbs.
3/32x12	$0.71	$0.355	$0.345
⅛x14	.28	.14	.13
5/32x14	.28	.14	.13
3/16x14	.27	.135	.125
7/32x14	.27	.135	.125
¼x18	.27	.135	.125
5/16x18	.27	.135	.125

MILD STEEL ELECTRODES
Murex Alternex; E-6013

Pink covering; plain tip with brown spot. AWS-ASTM Grade E-6013.

Alternex is recommended for use on mild steel fabrication of every description where the work cannot be positioned and where an easily handled rod, useable on either AC or DC, is required. On light metal applications, its remarkable arc stability makes it extremely easy to use.

Alternex is widely used on structural welding, pipe welding, the manufacture of storage tanks, gear guards, metal furniture, air frames and similar applications.

Standard package 50 bs. except 3/32 in. and smaller which is 25 lbs.

1/16 to 5/32 in. diam. See prices below.

Murex Type U; E-6013

Dark tan covering; plain tip with brown spot. AWS-ASTM Grade E-6013. AC or DC.

Type U is for vertical and overload applications; also for single-pass horizontal fillet work. No upper corner breakdown in lap welds made from horizontal position. Vertical welds may be made from the top down. Also for mild and galvanized steel in structural welding, fabrication of tanks, railroad car parts, light machine frames, and general maintenance. Especially dependable in hands of moderately skilled welders.

Standard package 50 lbs.

5/32 to 5/16 in. diam.

Alternex; Type U
Price Per Pound

Size, in.	Less than std. pkg.	50 to 200 lbs.	500 to 950 lbs.
5/64x12	$0.43	$0.215	$0.205
3/32x12	.31	.155	.145
⅛x14	.23	.115	.105
5/32x14	.23	.115	.105
3/16x14	.22	.11	.10
7/32x18	.22	.11	.10
¼x18	.23	.115	.105
5/16x18	.24	.125	.115

ARC WELDING ELECTRODES

M&T
HARD SURFACING ELECTRODES

Hardex

Hardex electrodes are an inexpensive group of hard-surfacing electrodes providing deposits with Brinell hardnesses ranging from a readily machinable 250 to a very hard 600. Hardex deposits are air hardening and combine considerable toughness with hardness. Greater or less hardness is obtainable by suitable heat treatment.

Hardex electrodes are designed for use where impact, wear and abrasion are primary factors. They can be used on a wide range of mild steels and high carbon steels and for direct bonding to high manganese steels where the deposits show wear resistance greater than that of the original manganese.

A few typical applications are: cement manufacturing and rock product equipment, mining machinery; construction equipment; dredging equipment; iron and steel mill equipment; railroad equipment.

Murex Hardex 25

White covering; brown and white tip. For deposits of approximately 250 Brinell. AC or DC.

⅛ to ¼ in. diameters inclusive.

Standard package 50 lbs.

Price Per Pound

Size, in.	Less than std. pkg.	50 lbs.	500 to 950 lbs.
⅛x14	$0.38	$0.19	$0.18
5/32x14	.32	.16	.15
3/16x14	.31	.155	.145
7/32x14	.31	.155	.145
¼x14	.31	.155	.145

Murex Hardex 45

White covering; brown and white tip. For deposits of approximately 450 Brinell. AC or DC.

⅛ to ¼ in. diameters.

Standard package 50 lbs.

Murex Hardex 60

White covering; brown and yellow tip. For deposits of approximately 600 Brinell. AC or DC.

⅛ to ¼ in. diameters inclusive.

Standard package 50 lbs.

Price Per Pound

Size, in.	Less than std. pkg.	50 lbs.	500 to 950 lbs.
⅛x14	$0.46	$0.23	$0.22
5/32x14	.43	.21	.20
3/16x14	.39	.19	.18
7/32x14	.39	.19	.18
¼x14	.39	.19	.18

ELECTRODES FOR CAST IRON WELDING

Ni-Rod

AC or DC. All position. Deposit is identical in appearance to cast iron; machinable.

Ni-Rod is the electrode most commonly used for the repair of damaged or broken castings of cast iron. Welds are strong, free from cracks and porosity and are machinable. Special nickel core and controlled composition of the flux coating produce a smooth bead from which slag can be easily removed.

5 lbs. in a standard package.

Price Per Pound

Size, in.	Less than 50 lbs.	50 to 195 lbs.	200 lbs. or more
3/32x11	$1.60	$1.55	$1.50
⅛x14	1.50	1.45	1.40
5/32x14	1.40	1.35	1.30
3/16x14	1.40	....	....

Note—Welding electrodes for tool steel welding, all types of bronze welding and special purpose welding available on special order.

GAS WELDING RODS

STEEL AND CAST IRON

Oxweld No. 1 High Test (Pat.) Steel Rod

For high-strength welds in steel plate, sheet, structural shapes, pipe, and castings. This rod has no equal for welding structures subject to high stress, and welds made with it develop much higher tensile strength than welds made with low-carbon steel rods.

Price Per Pound

Size, in.	1-99 lbs.	100-199 lbs.	200-499 lbs.
⅜	$0.22	$0.20	$0.19
5/16	.22	.20	.19
¼	.22	.20	.19
3/16	.22	.20	.19
⅛	$0.23	$0.21	$0.20
3/32	.24	.22	.21
1/16	.24	.23	.22

Oxweld No. 7 Drawn Iron Rod

Produces ductile, readily machinable welds in steel sheet, plate, castings, and pipe. Welds are sufficiently strong for ordinary purposes, where high tensile strength is not important.

Price Per Pound

Size, in.	1-99 lbs.	100-199 lbs.	200-499 lbs.
¼	$0.23	$0.21	$0.20
3/16	.23	.21	.20
⅛	.24	.22	.21
3/32	$0.25	$0.23	$0.22
1/16	.26	.24	.23

Oxweld No. 32C.M.S. (Pat.) Steel Rod

Intended especially for high-strength high-speed welding of steel pipe, tanks and pressure vessels.

Price Per Pound

Size, in.	1-99 lbs.	100-199 lbs.	200-499 lbs.
5/16	$0.28	$0.26	$0.25
¼	.28	.26	.25
3/16	.28	.26	.25
⅛	$0.29	$0.27	$0.26
3/32	.30	.28	.27
1/16	.30	.28	.27

Oxweld No. 9 Cast Iron Rod

For fusion-welding gray iron castings. Deposited weld metal is as strong as the casting and as easily machined.

Price Per Pound

Size, in.	1-99 lbs.	100-199 lbs.	200-499 lbs.
⅜	$0.24	$0.22	$0.21
5/16	.25	.23	.22
¼	$0.27	$0.25	$0.24
3/16	.29	.27	.26

BRONZE

Oxweld No. 25M (Pat.) Bronze Rod

For high-strength, wear-resisting fusion welds in copper, brass, or bronze, and for bronze-welding cast iron, malleable iron, or steel. No. 25M is also used for building up worn or broken parts, such as gear teeth. It melts rapidly, flows freely, tins easily, solidifies quickly, and produces deposited metal of high quality.

Price Per 100 Pounds

Size, in.	1-49 lbs.	50-99 lbs.	100-299 lbs.
⅜	$68.25	$58.25	$48.25
¼	71.25	61.25	51.25
3/16	74.75	64.75	54.75
⅛	$81.75	$71.75	$61.75
3/32	86.75	76.75	66.75
1/16	96.75	86.75	76.75

Tobin Bronze Rod

"Tobin" is the trade-mark of the American Brass Company for a bronze rod satisfactory for welding cast iron, brass, or bronze where the extra high strength and ductility of Oxweld No. 25M Bronze Rod are not required.

Price Per 100 Pounds

Size, in.	1-49 lbs.	50-99 lbs.	100-299 lbs.
¼	$70.25	$60.25	$50.25
3/16	73.75	63.75	53.75
⅛	80.75	70.75	60.75

ELECTRODE HOLDERS

JACKSON INSULATED

JACKSON
DETROIT, U.S.A.
PATENTED

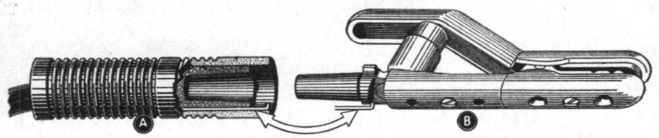
With Stationary Jaws

A long-time favorite with those who prefer holders with tongs made of high copper content alloy. Sturdy handles and crown-type insulators are well ventilated for cool operation.

Mechanical, soldered or brazed cable connection.

Model A-3S has special handle for greater ventilation. Designed to handle the "hot jobs" with cool efficiency.

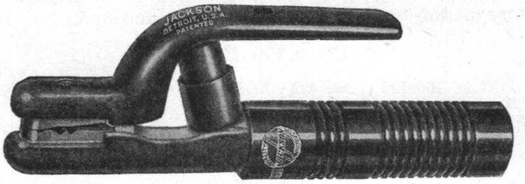
Nos.	Each	Holds electrodes, in.	Amps.	Length, in.	Wt. each, oz.
A-1	$5.00	to ¼	300	11⅛	22
A-3	6.50	to ⅜	500	11¼	29
A-3S	6.50	to ⅜	500	13⅛	32½



"Quik-Trik"; Stationary Jaws

Consists of a separate "Stinger End" which may be easily detached from the cable connector end, enabling the welder to carry his "Stinger End" to different stations in the shop.

Nos.	Each	Stinger end only, each	Holds electrodes, in.	Amps.	Length, in.	Wt. each, oz.
TA-1	$5.50	$4.00	to ¼	300	11⅛	28
TA-3	7.00	5.50	to ⅜	500	11¼	31¼



With Replaceable Jaws

These insulators have an improved, yoke-type pivoting device which makes them easier to knock down and assemble. Greater air space between metal parts and insulators make them work cooler.

Featherlite Models

Tongs are made of light weight metal alloy. They are highly recommended where operator fatigue must be kept at a minimum. Replaceable jaws are Mallory 3 Metal. Cable connection must be made mechanically.

Nos.	Each	Holds electrodes, in.	Amps.	Length, in.	Wt. each, oz.
A-W	$6.00	to ¼	300	9¾	14
A-5S	7.00	to 5/16	400	11⅛	21

Forged Copper Alloy Models

For those who prefer soldered or brazed cable connections. Cables may be either soldered, brazed, or clamped in place mechanically. Replaceable jaws are of Mallory 3 Metal.

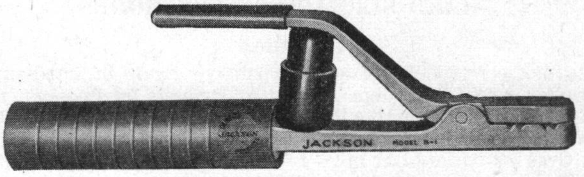
Heavy duty No. A-3SC has larger handle for greater ventilation.

Nos.	Each	Holds electrodes, in.	Amps.	Length, in.	Wt. each, oz.
A-WC	$6.00	to ¼	300	9¾	26
A-5SC	7.00	to 5/16	400	11⅛	33
A-3SC	7.00	to ⅜	500	13⅛	36

All above, one in a box.

ELECTRODE HOLDERS

JACKSON SEMI-INSULATED



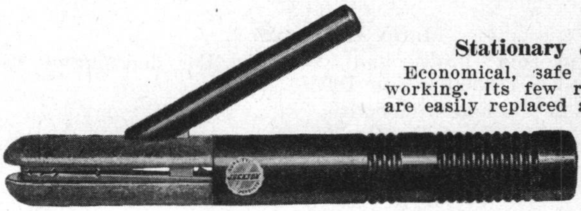
With Stationary Jaws

Made of high copper content alloy, with handle, thumb-grip and spring insulated. No. B-4 has tongs made entirely of Mallory 3 Metal.

Mechanical, soldered or brazed cable connection.

Nos.	Each	Holds electrodes, in.	Amps.	Length, in.	Wt. each, oz.
B-1	$2.75	to ¼	300	10⅞	17
B-3	3.85	to ⅜	500	10⅞	24½
B-4	3.65	to 3/16	200	9¼	14½

JACKSON BLADE-TYPE, INSULATED



Stationary Jaws

Economical, safe and cool working. Its few rugged parts are easily replaced at low cost.

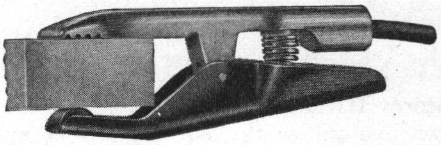
Jaw insulators of the Jackson channel and crown-type design give extra protection.

Mechanical, soldered or brazed cable connection.

	Each
No. **BT-3**—Holds electrodes through ¼ in., 300 amps., 11¼ in. long; wt. each 20 oz.	$5.50

WELDING GROUND CLAMPS

JACKSON



Copper Alloy Upper Tong

Easily and quickly attached.

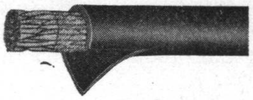
Nos. 1 and 1/0, mechanical or soldered connection; No. 4/0, soldered connection only.

Nos.		1	2/0	4/0
Fits cables		4–1/0	1/0–2/0	3/0–4/0
Jaws open, in.		1 9/16	1¾	1¾
Max. cap., amps.		300	500	500
Wt. each, lbs.		1 5/16	1 5/16	1 5/16
Complete	Each	$2.75	3.50	3.25
No. 16—Cable Clamp, for mechanical conn.	Each	.15	.15	....
No. 35—Upper tong	Each	1.85	2.35	2.25
No. 36—Lower tong	Each	.85	.85	.85
No. 37—Spring	Each	....	.15	.15
No. 38—Spring insulator	Each	.05	.05	.05
No. 39—Pivot pin	Each	.02	....	....
No. 40—Spring	Each	.15	....	....
No. 48—Pivot pin	Each	....	.03	.03
No. 1103—Spring cup	Each	.15	.15	.15

All above, one in a box.

WELDING CABLE

SECURITYFLEX



Single Conductor

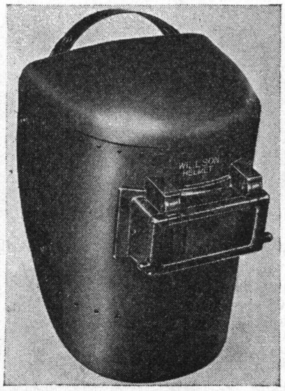
Fine copper wires laid up in a rope strand. Separators applied over conductor to prevent rubber jacket from penetrating into strand.

Constructed in accordance with IPCSA specifications.

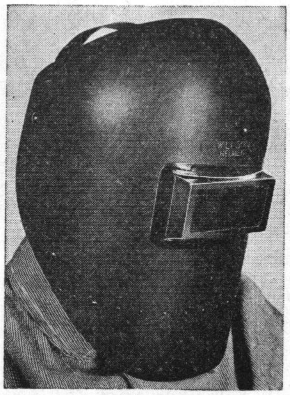
Size AWG or MCM	Per 1000 ft.	No. of wires (34 AWG)	Capacity amps.	Diam. over all, in.	Wt. per 1000 ft., lbs.
8	$ 240.00	420	50	.390	140
6	317.00	686	75	.400	165
4	450.00	1078	100	.495	265
3	485.00	1372	150	.500	290
2	573.00	1750	200	.560	350
1	670.00	2156	250	.625	445
1/0	775.00	2695	300	.675	525
2/0	922.00	3381	375	.750	635
3/0	1110.00	4263	450	.815	765
4/0	1350.00	5341	550	.900	945

WELDING HELMETS

WILLSON FIBRE



No. 20S



No. 230

Stationary Window

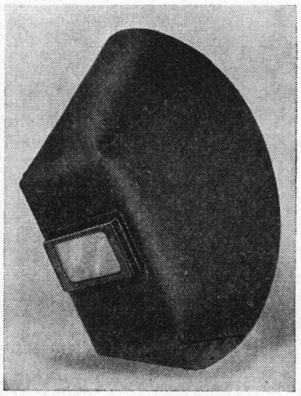
Fitted with laminated glass. Composition flip front; inner bibb; adjustable chin rest.

	Each
No. 20S—Fabricated shell, strong riveted construction; wt. each 26½ oz.	$10.50
No. 60S—One-piece shell; wt. each 25½ oz.	10.50

For Both Carbon Arc and Metallic Arc Welding

For railroad, steel foundry, boiler shop, street railway and general welding. Metal glass holder; inner bibb; adjustable chin rest.

	Each
No. 130—Fabricated shell, strong riveted construction; wt. each 23 oz.	$7.50
No. 230—One-piece shell; wt. each 22 oz.	7.50



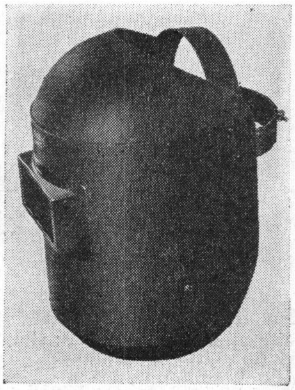
Light Weight, Low Cost

Furnished complete with Willson-Weld filter glass.

Exceeds U. S. specifications for maximum permissible transmission of ultra-violet and infrared rays.

	Each
No. 510—Fabricated construction; wt. each 15 oz.	$6.50

No. 330S



No. 26

Composition Glass Holder

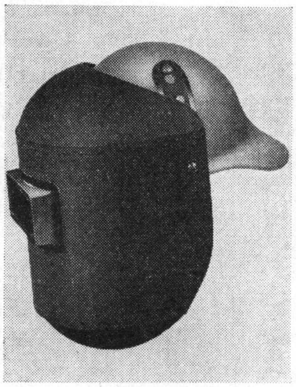
The glass holder of fine grade composition will not warp or bend. Not a conductor of electricity. Not affected by moisture or extreme heat. Inner bibb; adjustable chin rest.

	Each
No. 330S—Fabricated shell, strong riveted construction; wt. each 24 oz.	$8.50
No. 630S—One-piece shell; wt. each 23 oz.	8.50

With 2F Headgear

Conforms to Federal Specifications GGG-H-211 and U. S. Navy Specifications 37H4D.

	Each
No. 26—Fabricated shell; wt. each 23 oz.	$8.75

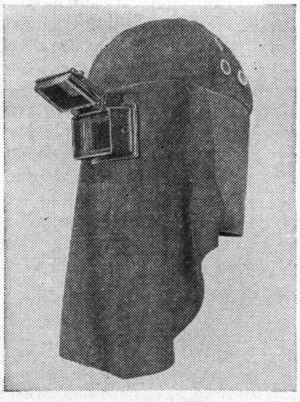


With Arms for Attaching Hard Hat

When used with hard hat it conforms to U. S. Navy Specifications 37H-12.

	Each
No. 126—Fabricated construction; without hard hat; wt. each 14 oz.	$8.25

WILLSON LEATHER



Chrome Leather

Has a composition flip front with Willson-Weld filter glass and clear cover glass in the hinged portion, and clear laminated glass in the stationary part.

	Each
No. 9—Wt. each 25½ oz.	$14.25

All above, one in a carton.

Extra Glasses

	2x4¼ in., each	2x4⅛ in., each
Filter Glass—Specify shade	$1.00	1.00
Clear Cover	.05	.05
***Klearsite**—Treated	.20	.20

*Treated lens permit wiping off many times.

Ask for Special Bulletin Covering the Complete Line of Willson Welding Items

INDUSTRIAL GOGGLES

JACKSON WELDING

For Gas Welding, Cutting and Brazing

Light and easy to wear; simple and easy to adjust; elastic head band.

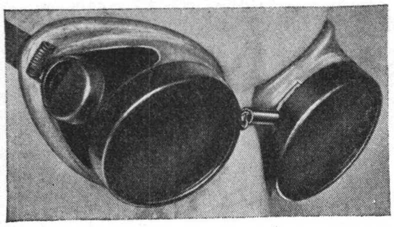
Eye cups are of molded plastic, joined together flexibly so they may be easily fitted against the face of the wearer. The outside of each cup has ventilating screen, and baffle plate, which prevents fogging, yet keep flying particles and stray light rays from reaching the wearer's eyes.

Lenses—Standard 50 mm. size, available in Federal Specification shades, 3, 4, 5 and 6. Cover glasses protect the filter lenses from pitting.

Per pair

No. WR50—Wt. per pair 3¾ oz. ...$2.70

WILLSON WELDING



For Acetylene Cutting and Burning

Brown composition cups shaped to fit; heat and moisture proof. Indirect ventilating ports keep out injurious light flashes, sparks, etc. Adjustable chain bridge; one-piece adjustable headband.

With 50 mm. Willson-weld filter lenses, clear cover glasses, external lens retaining ring.

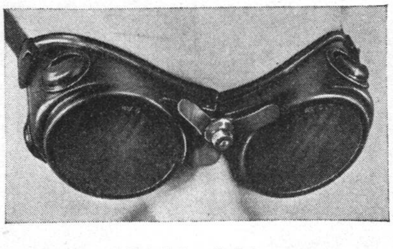
Per pair

No. RW50—Wt. per pair 3 oz. $2.45

All above, one pair in a box.

Note—In ordering welding goggles specify shade of filter lenses wanted.

WILLSON COVER-ALL WELDING



Lightweight

A composition goggle for use with or without correction spectacles. Each cup molded in one piece with internal lens retaining ring.

With 50 mm. Willson-Weld lenses, with clear cover glasses. Lenses easily replaced with flat metal wrench furnished.

Adjustable leather nose bridge aids in correct fitting and in keeping out light rays, sparks and hot metal.

Brown composition cups; two-piece elastic headband.

Per pair

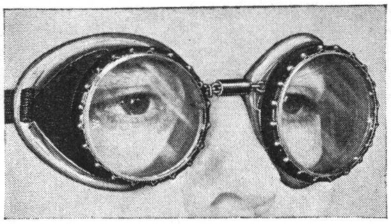
No. CW50—Wt. per pair 3½ oz. ...$2.65

50 mm. Willson-Weld lenses 1.10

50 mm. clear cover lenses .... .10

Two-piece adjustable elastic headband ....Each .18

WILLSON GRINDING, CHIPPING AND RIVETING



Direct Ventilation

For use in the most hazardous operations. Built to withstand hard service.

Brown composition cups, side screen ventilation. Adjustable chain bridge covered with plastic tubing; Elastic headband.

With 50 mm. clear Super-Tough lenses, front ventilated lens retaining rings; shock absorber spacer rings set behind each lens.

Per pair

No. RR50—Wt. per pair 2¾ oz. $2.20

50 mm. Super-Tough lenses 1.45

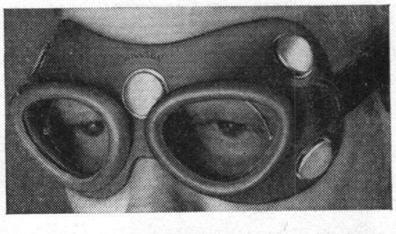
Metallic lens retaining rings .... .22

Ventilating lens retaining rings, including shock absorber spacer rings .... .30

Elastic handband ....Each .18

All above, one pair in a box.

WILLSON RUBBER MASK TYPE



For Chemical Workers; For Chipping, Grinding, Etc.

Widely used in dangerous eye-hazardous work and is equally suitable whether or not the worker wears correction spectacles.

Flat edge frame. 49x60 mm. drop eye Super-Tough lenses. Adequate ventilation provided through five ventilating ports, screened to prevent entrance of dust. Two-piece ¾ in. molded rubber headband.

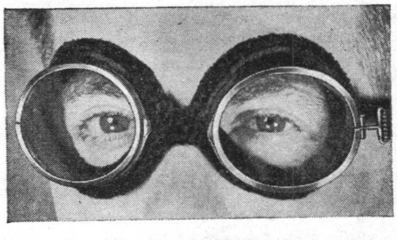
Per pair

No. X31—Wt. per pair 3½ oz. $2.40

Drop eye Super-Tough lenses 1.15

Headbands ....Each .24

WILLSON DUST TYPE



Ventilated

Fabric cups set in a chenille bound mask. Ventilated through fabric. Adjustable elastic headband.

Oval shaped Super-Tough lenses provide wide vision and are easily replaceable.

Per pair

No. D81—Wt. per pair 2 oz. $2.95

Super-Tough lenses .... .90

All above, one pair in a box.

EXTRA GLASSES

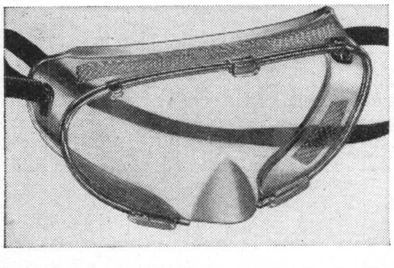
Per pair

Filter lenses—50 mm., specify shade $1.10

Clear cover lenses—50 mm. .... .10

Spatter proof cover lenses—50 mm.; an improved clear cover glass treated to resist excessive pitting during arc and acetylene welding operations; lasts many times longer than untreated cover glass .... .20

WILLSON MONOGOGGLE



Streamlined Positive Eye Protection

A new development in plastic eye protection for grinding, chipping, spot welding, chemical splash. It has an enlarged protection area and fits, with ample clearance, over prescription spectacles without putting any pressure on the nose bridge.

The Monogoggle has been thoroughly tested for optical clarity, light transmission and high velocity impact resistance. Its positive protection is assured.

Clear plastic frame and lens; ventilated. Large or small nose as specified.

Each

No. 1—Wt. each 1¼ oz. $1.70

One in a box.

JACKSON FACE SHIELD

For Metal Finishing, Metal Pouring; Spot, Gun and Flash Welding, Wood Working, Etc.

Improved headgear made of extruded plastic. Leather sweat band. Head gear pivot assembly has tension locked in at the factory.

Visor made of fire repellent, flexible, plasticele. Wire-reinforced gimp binding enables user to shape visor to his requirements.

Visor attached to outside of spark deflector.

All visors 11 in. wide. In clear, and in light, medium and dark green (specify).

No. J-1—Complete with Visor

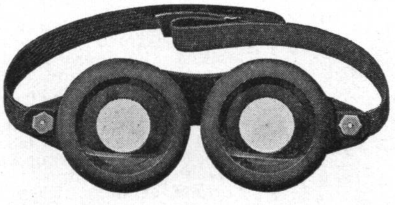
Length visor, in.		4	6	8
.020 in. Thick	Each	$1.95	2.05	2.15
.030 in. Thick	Each	2.05	2.15	2.25
.040 in. Thick	Each	2.15	2.25	2.35

Approximate weight each 5½ ounces.

One in a box.

INDUSTRIAL GOGGLES

COVERS "NOD AND SHAKE" RUBBER



Gas-Tight, Fog-Proof

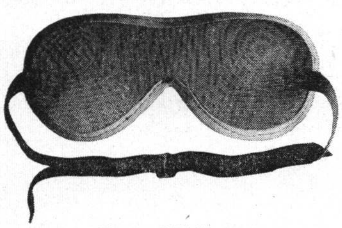
Provide eye protection and increased efficiency for workmen in hazardous places. Water in the chambers washes lenses clear of moisture when agitated by the normal movements of the body. Excessive fogging is eliminated by nodding and shaking head.

Per pair

"Nod and Shake"—Wt. per pair 3 oz. $1.65

One pair in a box.

WHITE WIRE SCREEN TYPE



Bound Edges

A molded goggle of non-rusting wire. Edges bound in non-absorbent fabricoid. Elastic headband.

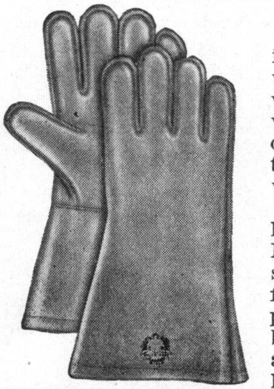
Per dozen

White Wire Screen—Wt. per dozen 1½ lbs. $4.25

One dozen in a box.

WELDERS' GLOVES

BULLS EYE



All-Leather

An outstanding glove that will appeal to welders who want the most comfort, protection and long wear.

Seamless horsehide palm. No exposed seams at tip of fingers. One-piece cowhide back, lined with a heavy wool heat breaker.

Seams that get the toughest wear are welted for maximum strength.

Per pair

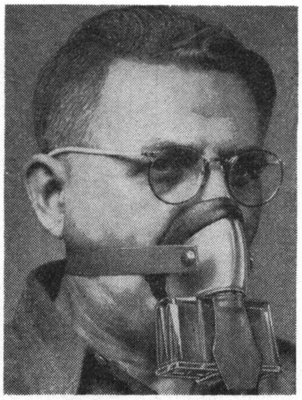
No. 1000—14 in. long over all; medium and large sizes; wt. per dozen pairs 10 lbs. $2.75

One pair in a paper bag.

Note—When ordering gloves, specify medium or large size.

RESPIRATORS

M.S.A. CLEARVUE DUSTFOE



For Protection Against All Dusts

Employing a single inexpensive throw-away filter, colored red or green, according to type, the Dustfoe respirator insures protection against every type of nuisance or harmful dusts encountered on the job.

Outstanding features include a transparent, durable molded plastic filter container enabling user to check type and condition of filter at a glance. Sturdy, lightweight, bright aluminum face piece, rubber cushioned; formable by the user to exactly fit his facial contour. Adjustable head band; leakproof army-type exhalation valve.

Permits unobstructed downward or sidewise vision. Goggles, spectacles or head covering of any kind may be worn without interference.

Each

No. CM-46161 — Dustfoe respirator, type AC, U.S. Bureau of Mines approved, complete with 5 extra filters; wt. each 4 oz. $2.85

No. CM-46162—Dustfoe all-dust respirator, U.S. Bureau of Mines approved, complete with 5 extra filters; wt. each 4 oz. 2.85

One in a box.

EXTRA FILTERS

Green Type AC

Recommended as protection against type AC pneumoconiosis-producing and nuisance dusts and mists; also where dust concentration is heavy and fast-clogging.

No. CM-41552—Dust and mist filter, 5 in a package....Per package $0.40

No. CM-41553—Dust and mist filters, 50 in a box.......Per box 3.00

Red All-Dust

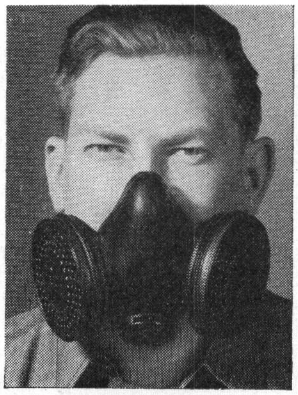
Provide maximum protective efficiency against all dusts and should be used as protection whenever a variety of dusts, including toxic dusts, such as lead, cadmium, manganese, etc., are present in the air.

No. CM-41647—All-dust filters, 5 in a package ....Per package $0.40

No. CM-41649—All-dust filters, 50 in a box ....Per box 3.00

RESPIRATORS

M.S.A. COMFO DUST AND MIST



Safeguards workman against pneumoconiosis-producing or nuisance dusts whether dry or supported in a water-mist. Offers protection against inhalation of the mist produced in chromium plating in addition to silica coal; iron, asbestos, and other dust particles of similar type.

Snug fitting, comfortable, cushioned face piece; twin large-area filters of lightweight aluminum; guarded exhalation valve; elastic headband.

Unobstructed sidewise and downward vision; no interference with goggles or headgear.

Each

No. CR-44777—Comfo dust and mist respirator, U.S. Bureau of Mines approved; complete with 10 extra filters, colored green; wt. each 7 oz. $3.25

Extra Filters

Per package

No. CR-17619—Green filter discs for dust and mist respirators $0.40

Ten in a package.

M.S.A. ALL-DUST

Officially approved by U.S. Bureau of Mines for protection against inhalation of toxic dusts such as lead, arsenic and cadmium, plus type A dusts such as silica, coal and cement.

Identical with the dust and mist filter above except for filter.

Each

No. CR-44778—Comfo all-dust respirator, with 10 extra filters, colored red; wt. each 7 oz. $3.25

One in a box.

Extra Filters

Per package

No. CR-17393—Red filter discs for all-dust respirators $0.40

Ten in a package.

RESPIRATORS

COMFO METAL FUME TYPE

Provides approved respiratory protection in toxic concentrations of metal fumes resulting from molten alloys or materials containing lead, zinc, cadmium, manganese, chromium and arsenic. Examples of such operations include burning, welding and riveting steel coated with lead paint and melting and pouring brass, bronze, lead, cadmium; also smelting and refining of all toxic metals.

It is of standard "Comfo" construction, with cushion face piece; twin, uniquely designed filter units with aluminum filter receptacles; guarded exhalation valve, and adjustable headband. Designed for use under all types of welding helmets.

Each

No. CR-44752—Comfo metal fume respirator, with two sets of filters, colored gray; wt. each 7 oz. $3.75

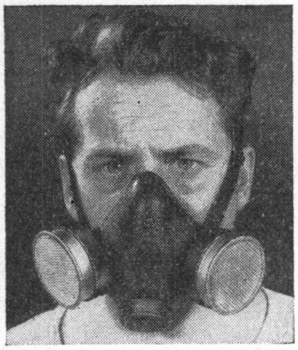
One in a box.

Extra Filters

Per package

No. CR-17034—Metal fume filters, 2 per box $0.50

M. S. A. CHEMICAL CARTRIDGE TYPE



Particularly useful in paint spraying and degreasing operations. Also provides efficient and comfortable protection against low concentration of many harmful organic vapors and acid gases.

"Comfo" type floating cushion facepiece, long-life filter cartridges, guarded exhalation valve, adjustable headband.

For use only in atmospheres where gases or vapors are uncomfortable or toxic after prolonged or repeated exposure.

Each

No. CR-44158—With two type GMA cartridges for organic vapors and paint spraying; wt. each 11½ oz. $5.50

No. CR-44135—Type GMA replacement cartridges .... .50

One in a box.

Note—Also available with additional types of cartridges, as follows:

Type GMC—For protection against acid gases or combinations of organic vapors and acid gases.

Type GMD—Light concentrations of ammonia vapors.

DDT cartridges.

Mesorb cartridges—Metallic mercury vapor.

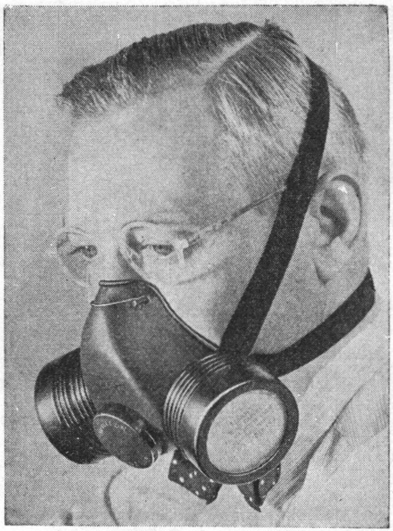
CAUTION

The following gases in concentrations which are deadly may be breathed by the unprotected person without the warning of immediate irritation:

Bromine
Chlorine
Fluorine
Ozone
Nitrogen Peroxide

RESPIRATORS

WILLSON CHEMICAL CARTRIDGE TYPE



Chemical cartridge respirators afford protection against the more common industrial gases and vapors in low concentrations, and are recommended for use only in conditions where there is danger from chronic poisoning resulting from repeated exposures over periods of days. They are not for use in conditions where there is danger of acute injury or effect on health. They are not substitutes for gas masks, air line respirators or local exhaust ventilation systems. Under no condition should chemical cartridge respirators be depended upon in the presence of carbon monoxide, nitrous oxide or in atmospheres deficient in oxygen.

Molded rubber facepiece with adjustable nose spring and double adjustable elastic headband provide leak-proof, comfortable fit. Dual cartridges reduces breathing resistance to a minimum.

No. 701 is covered by approval No. 2302 US Bureau of Mines.

Nos.	**701**	**711**
Capacity cartridge, CC	95	60
Wt. each, lb.	⅞	¾
Each	$5.00	4.00

For operations such as brazing and spraying and low concentrations of organic vapors of the following:

Acetaldehyde
Acetone
Acrolein
Alcohols
Aldehydes
Amyl Acetate
Benzine
Benzol
Butyl Acetate
Camphor
Carbon Disulphide
Carbon Tetrachloride
Chloropicrin
Chloroform
Creosote
Esters
Ether
Formaldehyde
Furfural
Gasoline
Hexane
Horseradish Vapors
Japan
Kerosene
Lacquer
Naphtha
Nitrobenzene
Onion Vapors
Ozone
Pentane
Phenol
Tar
Toluene
Trichlorethylene
Turpentine

Nos.	**702**	**712**
Capacity cartridge, CC	95	60
Wt. each, lb.	⅞	¾
Each	$4.50	4.00

For use in low concentrations of acid gases (inorganic) incident to operations in bleaching, disinfecting, refrigerating, pharmaceutical manufacturing, etc.; and:

Sulphuric Acid
Hydrochloric Acid
Hydrogen Chloride
Nitric Acid
Hydrogen Sulphide
Sulphur Dioxide

Nos.	**703**	**713**
Capacity cartridge, CC	95	60
Wt. each, lb.	⅞	¾
Each	$4.50	4.00

For use on pickling and smelting processes, the manufacture of leather, textiles, dyes, ink, soap, etc., and combinations of the following acid gases and organic vapors in low concentrations:

Acetic Acid
Bromine
Chlorine
Fluorine
Phosphorus Pentachloride
Phosphorus Trichloride
Silicon Tetrachloride
Sulphur Chloride
Sulphur Dichloride
Stannic Chloride

Nos.	**704**	**714**
Capacity cartridge, CC	95	60
Wt. each, lb.	⅞	¾
Each	$4.50	4.00

Contains No. 4 cartridge for ammonia fumes.

Extra Cartridges

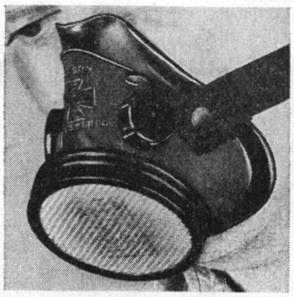
Nos.	1	2	3	4
For respirators, Nos.	701	702	703	704
Per box of two	$1.20	1.20	1.20	1.20

Nos.	11	12	13	14
For respirators, Nos.	711	712	713	714
Per box of four	$1.60	1.60	1.60	1.60

All above respirators, one in a box.

RESPIRATORS

WILLSON DUSTITE



With X2¾ Lintine filter discs. Recommended for use in light concentrations of harmless dusts only.

Molded rubber face piece; adjustable headband.

Each

No. 2—Wt. each 5 oz. $1.90

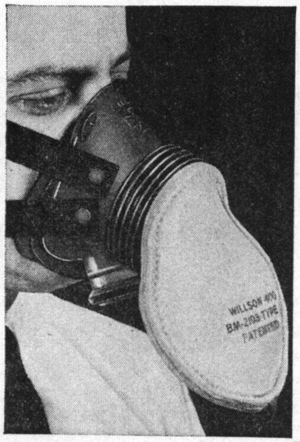
Extra Filters

Per 100

X2¾ Lintine filter discs ...$0.90

100 in a package.

WILLSON BAG TYPE



Approved by the U. S. Bureau of Mines for protection against the inhalation of pneumoconiosic-silicosis and asbestosis-producting dusts as encountered in industry.

Their very large filtering area offers exceedingly low breathing resistance. Light weight and can be worn for extended periods without discomfort.

Filter bags can be effectively cleaned by introducing a blast of compressed air into the interior periodically. When soiled by grease, dirt, etc., the outside surface can be cleaned with any drycleaning fluid without injury.

No. 400

Recommended for such dusts as silica, quartz, asbestos, aluminum, iron ores, etc., produced in various processes of mining, quarrying and tunneling and in the industrial operations of grinding, crushing and general processing of metals. Approval No. 2103.

Each

No. 400—Wt. each 10 oz. $3.30

No. 400L

Recommended for mechanically generated dusts whose main harmful constituent is lead such as encountered in the manufacture of storage batteries, enameling, pottery making, rubber compounding, sand papering and chipping painted surfaces; lining, milling and processing lead ores, etc. Approval No. 2108.

Each

No. 400L—Wt. each 10 oz. $3.55

One in a box.

INDUSTRIAL GAS MASKS

WILLSON APPROVED

Designed for protection against most of the toxic gases and vapors encountered in industry. The all-rubber facepiece which has the approval of the U. S. Bureau of Mines, is easily and quickly adjusted to fit all types of faces without undue pressure at any point. Lenses afford exceptionally wide vision in all directions.

Complete with waterproof carrying case and canister with protective capacity for one of the following gases or combinations. **Specify protection required when ordering.**

Acid-gases—organic vapors—ammonia—acid gases and organic vapors — chlorine — hydrocyanic acid gas—acid gases, organic vapors and ammonia.

The ammonia mask is particularly adapted for use in cold storage and refrigeration plants, the chemical industry, packing plants, or wherever ammonia is used or generated.

Each

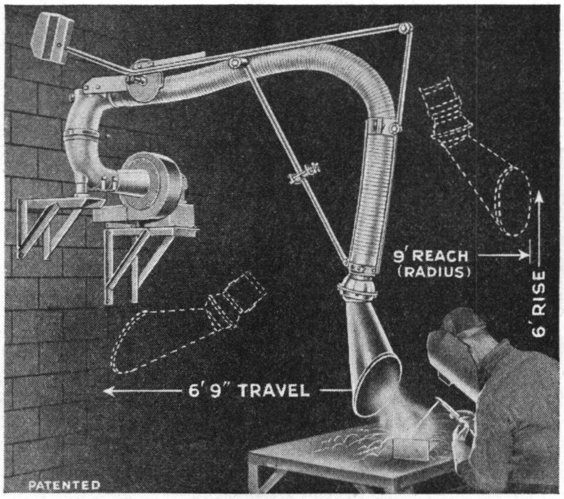
No. W1G—Wt. each 5½ lbs. $25.00

One in a box.

Note—Replacement canisters also available separately. Specify protection required.

WELDING FUME COLLECTORS

RUEMLIN



No. D-5310—With Exhaust Fan

Note great range of hood for use in welding positions. The flexible fan is mounted on the pivoted head. The hose and hood are counter-weighed and held in all operating positions by the friction wheel and friction rod.

Efficient — Because fumes are collected at the source.

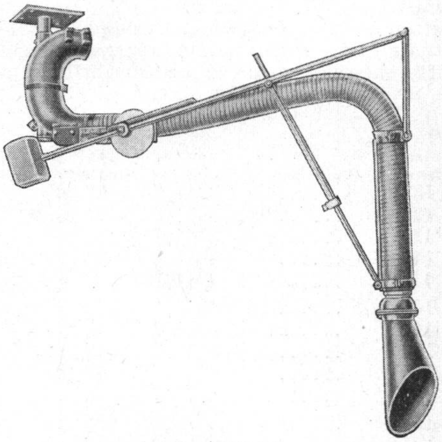
Practical — Quick positioning of hood provided.

Great Range — By circular and radial movements.

Building heat loss reduced to a minimum.

Requires least maintenance attention.

Standard unit operates on a 9 ft. maximum radius. A vertical hood movement of 10 ft. above floor is available when unit is installed.



No. D-5322

With ceiling type bracket. Swings in 360 degree circle. This arrangement provides maximum clearance with low headroom. Permits clearance of overhead obstructions such as steam pipes, etc. Also available with wall bracket.

The cone hood has a large opening for effectively collecting fumes. Hood may be placed 8 in. away from the arc thus ventilating many welding operations without movement of hood. Fumes and smoke do not escape to the general atmosphere.

Easily installed according to directions furnished. Wall or ceiling bracket included. Shipped assembled.

Each

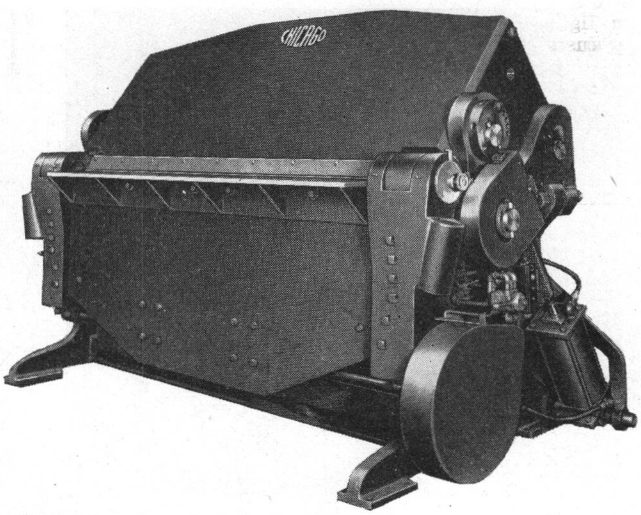
No. D-5310—Single Unit complete with exhaust fan, 1 HP motor, and wall mounting brackets; wt. each 260 lbs. .$257.00

No. D-5322—With ceiling or wall bracket, specify when ordering; wt. each 260 lbs. 257.00

Note—Available in **Multiple Units.** Complete information and prices on request.

POWER BENDING BRAKES

CHICAGO HEAVY DUTY, MOTOR DRIVEN



For bending material from 16 ga. to ¾ in. thick. The variety of bends that can be made without using dies or attachments is almost unlimited.

Constructed of steel plates, steel castings and alloy forgings throughout. Practically indestructible.

Adjustment provided to take various thicknesses of metal and for sharp or rounded bends.

All machines except the power clamp sizes are equipped with direct motor drive and with solenoid or magnetic brake and push button control. For two or three phase, 50 or 60 cycle current.

Air clamp furnished on larger sizes requires no adjustment for different thicknesses of metal as it locks at any point.

Speed of all motors should be about 1800 RPM.

Size, Nos.	Each	Bending length	Maximum capacity	HP motor	Minimum Flange on Cap. Mat.	Wt. each, lbs.
133	$......	3′ ½″	12 ga.	2	1″	1,550
134	......	3′ ½″	10 ga.	2	1″	1,725
*135	......	3′ ½″	$\frac{3}{16}$″	2	1¼″	2,100
144	......	4′ ½″	10 ga.	2	1″	2,410
145	......	4′ ½″	$\frac{3}{16}$″	3	1¼″	3,680
146	......	4′ ½″	¼″	5	1½″	4,525
147	......	4′ ½″	⅜″	5	2″	4,600
163	......	6′ 1″	12 ga.	2	1″	3,200
164	......	6′ 1″	10 ga.	3	1″	4,425
165	......	6′ 1″	$\frac{3}{16}$″	3	1¼″	5,045
166	......	6′ 1″	¼″	5	1½″	5,400
167	......	6′ 1″	⅜″	7½	2″	8,550
182	......	8′ 1″	14 ga.	2	1″	3,275
184	......	8′ 1″	10 ga.	3	1″	5,600
185	......	8′ 1″	$\frac{3}{16}$″	5	1¼″	6,010
186	......	8′ 1″	¼″	5	1½″	10,450
*187	......	8′ 1″	⅜″	7½	2″	17,600
*188	......	8′ 1″	½″	10	4″	22,000
202	......	10′ 1″	14 ga.	2	1″	4,000
203	......	10′ 1″	12 ga.	3	1″	5,775
204	......	10′ 1″	10 ga.	5	1″	7,600
*206	......	10′ 1″	¼″	7½	1½″	18,700
*207	......	10′ 1″	⅜″	10	2″	22,800
*208	......	10′ 1″	½″	15	4″	24,000
222	......	12′ 1″	14 ga.	3	1″	8,100
223	......	12′ 1″	12 ga.	5	1″	9,100
224	......	12′ 1″	10 ga.	5	1″	12,825
*226	......	12′ 1″	¼″	10	1½″	22,500
*228	......	12′ 1″	½″	20	4″	30,000
242	......	14′ 1″	14 ga.	5	1″	9,200
243	......	14′ 1″	12 ga.	5	1″	13,600
*244	......	14′ 1″	10 ga.	7½	1″	20,600
*245	......	14′ 1″	$\frac{3}{16}$″	10	1¼″	26,000
*246	......	14′ 1″	¼″	15	1½″	28,000
*248	......	14′ 1″	½″	30	4″	72,000

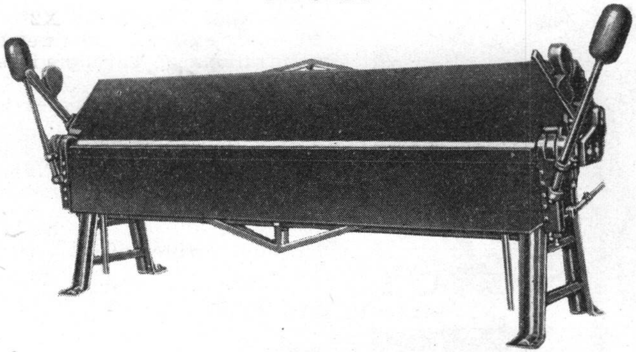
*These sizes equipped with air clamp.

Note—Box and Pan Brakes can be furnished.

Prices on Request

HAND BENDING BRAKES

CHICAGO



Standard

All main sections are welded steel plate with heavy truss rods and braces designed to give the greatest strength, perfect alignment and long life. These machines have the simplest and most efficient means of adjustment so that the inexperienced, as well as the experienced workman can set and operate them in the minimum amount of time. One man operation; each end clamps independently.

Capacity of all machines is rated at 1 in. flange or wider on mild steel, narrower flanges can be bent on lighter metal.

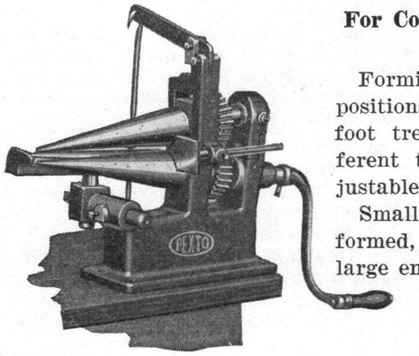
Size, Nos.	Each	Length	Capacity, gauge,	Ship. wt. each, lbs.
312	$......	3′ ½″	12	1000
314	......	3′ ½″	14	726
316	......	3′ ½″	16	483
412	......	4′ ½″	12	1230
414	......	4′ ½″	14	856
416	......	4′ ½″	16	569
512	......	5′ 1″	12	1875
514	......	5′ 1″	14	1415
516	......	5′ 1″	16	1085
518	......	5′ 1″	18	733
612	......	6′ 1″	12	2095
614	......	6′ 1″	14	1620
616	......	6′ 1″	16	1216
618	......	6′ 1″	18	833
812	......	8′ 1″	12	2634
814	......	8′ 1″	14	2065
816	......	8′ 1″	16	1545
818	......	8′ 1″	18	1030
1014	......	10′ 1″	14	3000
1016	......	10′ 1″	16	2500
1018	......	10′ 1″	18	2043
1218	......	12′ 1″	18	4250
1222	......	12′ 1″	22	2950

One in a crate.

Prices on Request

FUNNEL FORMERS

PEXTO



For Conical and Taper Work of All Kinds

Forming roll adjustable to all positions. Upper roll depressed by foot treadle; adjustable for different thicknesses of metal. Adjustable gauge for various lengths.

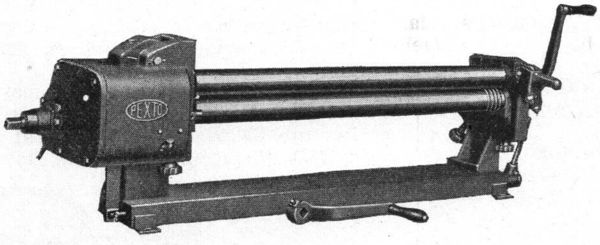
Smallest diameter that can be formed, on small end ⅝ in., on large end 3 in.

	Each
No. 459—Cap. 26 ga. mild steel, forming rolls 10 in. long; wt. each 95 lbs.	$160.00

One in a box.

SLIP ROLL FORMERS

PEXTO



Lift Type, 2½ in. Diameter Rolls

A convenient device enables the operator to use the machine for heavy work by putting hand crank on the drive shaft of machine thereby getting the benefit of the 2:4:1 ratio of gearing between drive shaft and rolls. In seconds the machine can be changed for direct drive on light material by disconnecting the drive shaft and putting the hand crank on the right hand extension of lower roll.

Housing rigidly mounted on steel base; solid steel machine cut gears. Rolls are ground and smoothly finished, with a series of grooves for forming work that has been previously wired. Patented hinged cap fitted to right end of housing.

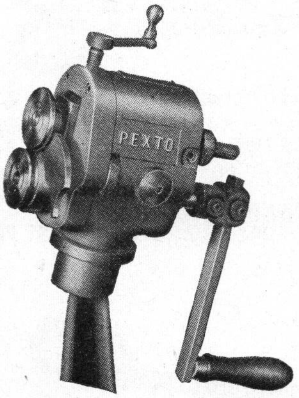
Hand Drive

Nos.	**390**	**391**	**392**
Cap. mild steel, ga.	16–18	18–20	20–22
Length rolls, in.	36	42	48
Ship. wt. each, lbs.	480	525	575
Each	$208.00	230.00	290.00

Note—Floor legs can be furnished at extra cost. Front upper and lower rolls are driven. At an extra cost can be furnished with all three rolls driven. When required motor drive or with pulleys, details will be furnished on request.

COMBINATION ROTARY MACHINES

PEXTO



For Turning, Burring, Wiring, Elbow Edging, and Flanging

Heavy totally enclosed frame, solid steel machine-cut quiet running gears. Two-in-one screw gauge can be applied to back of machine for burring and wiring operations and to front of machine for turning and elbow edging work. Hardened steel rolls held to key-seated shafts with screw nuts eliminating the necessity of locking gears to remove rolls. Forged steel crank for depressing top roll. Can be placed in any position so as not to interfere with material. Spring cushioned journal box and knurled lock nut with set screw for lower roll adjustment. Steel crank can be applied to top shaft for burring and wiring work and to lower shaft for turning, elbow edging and flanging operations.

	Each
No. 544—Without rolls, cap. 22 ga. mild steel, 2 in. between shaft centers; wt. each 25 lbs.	$35.00

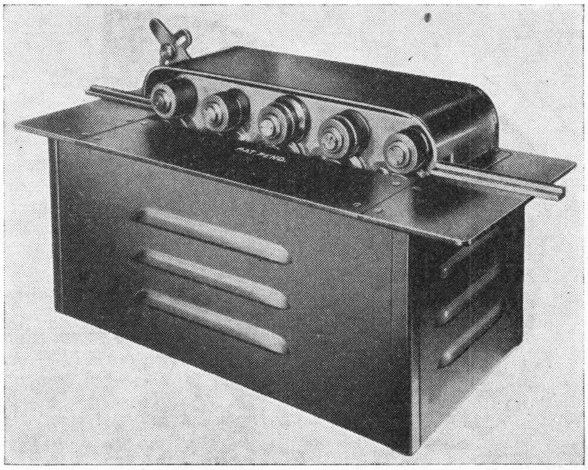
One in a box.

Rolls Only

Type of Rolls	Thin turning	Thick turning	Burring	Wiring	Elbow edging
Wt. set, lbs.	1	1	1	1	1
Per set	$3.95	3.95	3.95	3.95	3.95

PITTSBURGH LOCK MACHINES

MAPLEWOOD MODEL "S" PORTABLE



For 22 Gauge and Lighter

Equipped with ⅜ in. Pittsburgh Lock rolls. Interchangeable with Double Acme Lock, Drive Cleat and Right angle Bend rolls.

Head made of special alloy; balance of machine is all steel. Steel cut gears. Gears and rolls keyed on shaft. All rolls hardened and ground. Chain drive; steel sprockets.

¾ HP motor, 110 volts, single phase, AC.

	Each
Model "S"—With 1 set of Pittsburgh Lock rolls, 1 in. shafts; wt. each 225 lbs.	$248.00

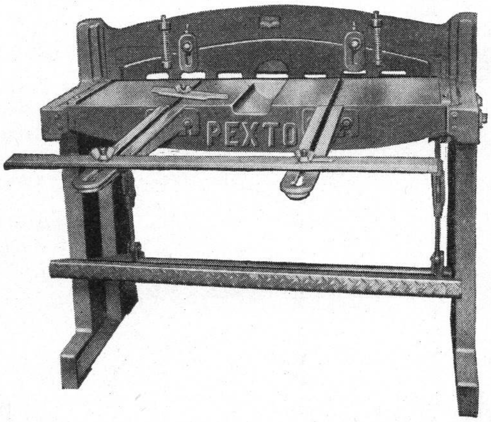
	Per set
Double Acme Rolls—Wt. per set 20 lbs.	$40.00
Drive Cleat Rolls—Wt. per set 20 lbs.	40.00
Right Angle Rolls—Wt. per set 20 lbs.	40.00

Open stock.

Note—Other Pittsburgh Lock Machines up to 18 ga. capacity are available.

FOOT SQUARING MACHINES

PEXTO



Straight Shearing

For straight shearing of sheet steel, copper, brass, aluminum, lead, zinc and other materials. Encased compression springs practically eliminate spring breakage. Precision back gauge with graduated back gauge rods and heavy truss rod of crosshead for maintaining alignment of knives, assures accurate shearing at all times.

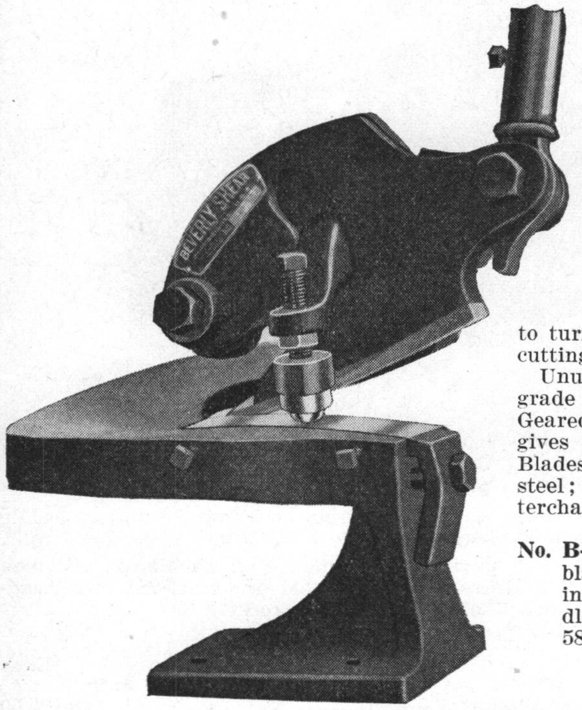
Front and back gauges and side gauge equipment are standard on all numbers. Spring hold-down furnished on all numbers but No. 132.

Nos.	**132**	**137**	**142**	**152**
Capacity mild steel, ga.	18	18	18	18
Nominal cutting length, in.	30	36	42	42
Shipping wt. each, lbs.	540	650	785	1030
Each	$225.00	240.00	330.00	415.00

Shipped on skids.

HAND SHEARS

BEVERLY THROATLESS



Sheard Metal Without Distortion

A heavy duty bench type shear that cuts all shapes, straight and irregular.

New ball-bearing metal holding device guards against distortion, scratching or marring metal.

The most efficient shear on the market for intricate cutting jobs, and is equal to any ordinary shear for straight work. Special design makes it possible to turn the metal to any position while cutting it.

Unusually strong and durable. High grade heat treated alloy steel body. Geared rack and pinion construction gives great power with little effort. Blades are made from highest grade tool steel; adjustable for wear and quick interchangeability.

Each

No. B-3—Cap. 3/16 in. mild steel, blades 3⅝ in.; 14 in. deep, 9 in. wide, 15 in. high less handle, 30 in. handle; wt. each 58 lbs. with blades $122.75

One in a box.

BEVERLY JUNIOR THROATLESS

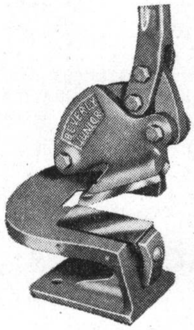
Same quality design and workmanship as the larger shear above. Performs intricate cutting as well as straight work. The metal may be turned to any position while cutting.

High grade alloy steel body. Finest tool steel blades, properly tempered and drawn; adjustable for wear and are quickly interchangeable.

Compound leverage assures powerful and effortless operation.

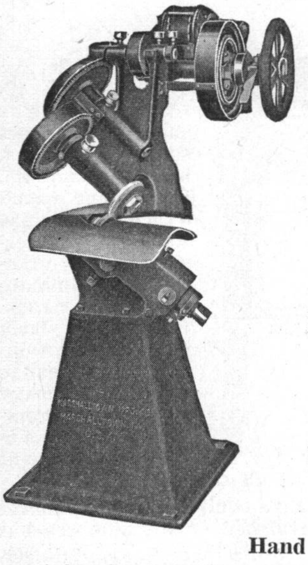
Each

Junior—Capacity 18 ga. mild steel, blades 2⅝ in. long; 5 in. deep, 4½ in. wide, 17 in. high over all; wt. each 6 lbs. with blades $21.50



ROTARY SHEARS

MARSHALLTOWN THROATLESS



Power Drive

The throatless feature places no limit on the size material to be sheared, and straight, irregular or circular patterns can be followed.

Cutters are made of high grade tool steel, accurately ground and tempered.

Upper cutter is corrugated to feed the material and is driven, while the lower cutter is free to revolve in a sleeve.

Adjustments are easily made—full instruction with each shear.

Capacity to ¼ in., 26x26 in. floor space; 6 in. cutting radius, cutting speed 6 ft. per minute at 315 RPM.

Each

No. 114M—Motor drive; 1 HP 1750RPM motor required, less motor; net wt. each 1200 lbs.; ship. wt. 1350 lbs. $695.00

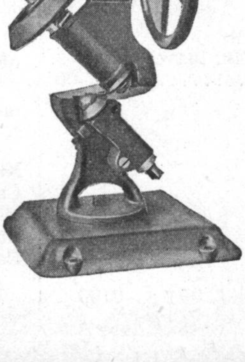
No. 114P—Belt drive; net wt. each 1100 lbs.; ship. wt. 1200 lbs. 626.00

Hand Operated

A handy, general purpose shop tool that will do hundreds of odd shearing jobs.

Each

No. 18H—Cap. to 18 ga., 2x½ in. cutters, 19½ in. high, 9x9 in. bench space, 1¾ in. cutting radius; net wt. each 36 lbs.; ship. wt. 45 lbs. $52.00



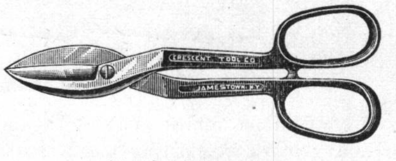
All above, one in a box.

TINNERS' SNIPS

CRESCENT

Solid forged special steel, special ground blades; blue enameled handles, polished blades.

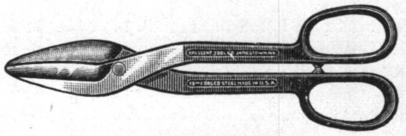
Blades are ground on special machines which give them a keen strong edge that will retain its sharpness. Powerful leverage makes them cut evenly and smoothly.


CRESCENT TOOL CO.
JAMESTOWN, N.Y.

Straight Pattern

Nos.	Each	Length, in.	Cut, in.	Wt. ea., lbs.
S47	$1.50	7	1¾	7/16
S48	1.65	8	1⅞	½
S49	1.80	9	2	9/16
S410	2.00	10	2¼	13/16
S411	2.20	11	2½	1 3/16
S412	2.65	12¾	3	1¾
S413	3.35	13⅞	3½	2
S414	3.70	14⅞	4	2⅝

One in a box.



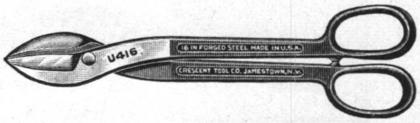
Combination Pattern

Will cut circles and irregular shapes as well as straight lines.

Each

No. U-412—12¾ in. long, 3 in. cut; wt. each 1¾ lbs. $2.90

One in a box.


U416
CRESCENT TOOL CO. JAMESTOWN, N.Y.

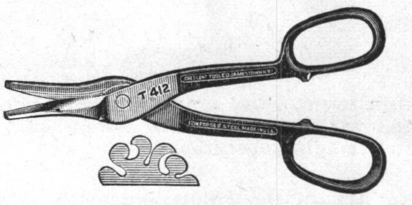
Heavy Duty Combination Pattern

Short powerful jaws and long handles give wonderful leverage. Cuts curves as well as straight lines.

Each

No. U-416—16¼ in. long, 2¾ in. cut; wt. each 4 lbs. $5.00

One in a box.



Circular Cutting

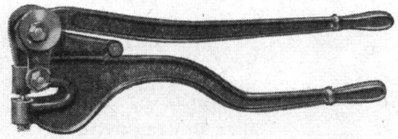
Designed especially for cutting out intricate patterns and curves. They cut smoothly and leave the metal unbent.

Nos.	T-47	T-412
Length, in.	7	12¾
Cut, in.	1¾	3
Wt. each, lbs.	7/16	1¾
Each	$2.05	2.90

One in a box.

METAL PUNCHES

WHITNEY IMPERIAL ROLLER BEARING



For Hand Use

Drop forged steel, all wearing parts hardened. Will work inside 90 degrees. Offers quick changing of punches and dies. No lever to become disengaged by moving too far in either direction and has no cams to wear out. Stripping is positive.

Complete with three punches and dies.

Each

No. 7—Cap. ¼ in. hole through ⅛ in., 1⅞ in. depth throat, ¼ in. height gap, 18½ in. long; wt. each 7½ lbs. **$22.05**

No. 7½—Cap. ¼ in. hole through 3/16 in., 2 in. depth throat, ⅜ in. height gap, 22 in. long; wt. each 10½ lbs. **27.00**

One in a box.

Extra Dies

Each

No. 7-D—For No. 7; sizes 3/32 to 7/16 in. by 64ths **$0.55**

No. 7½-D—For No. 7½; sizes 3/32 to 7/16 in. by 64ths .... **.55**

Extra Punches

Each

No. 7-P—For No. 7; sizes 3/32 to 7/16 in. by 64ths **$0.55**

No. 7½-P—For No. 7½; sizes 3/32 to 7/16 in. by 64ths .... **.80**

Open stock.

Note—When ordering, always specify size of punches and dies wanted.

WHITNEY JUNIOR HAND

Capacity ¼ in. Hole Through 16 Gauge Steel or Equivalent

A powerful and speedy punch that is made from best materials to render real service. Equipped with graduated gauges.

Each

No. 5—Complete with seven sets of dies and punches, 3/32, ⅛, 5/32, 3/16, 7/32, ¼ and 9/32 in.; 2 in. depth of throat, ¼ in. height gap, 8½ in. long over all; wt. each 2¾ lbs..**$11.55**

One in a box.

Extra Punches and Dies for No. 5 Punch

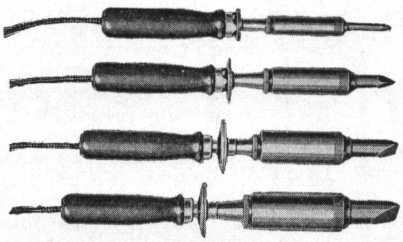
Each

Punches—1/16 to 9/32 in. by 64ths **$0.45**

Dies—1/16 to 9/32 in. by 64ths .... **.45**

ELECTRIC SOLDERING IRONS

AMERICAN BEAUTY



Core of heating unit made of solid steel rod around which is wound chrome-nickel ribbon resistance wire. This assembly in turn is brought into intimate contact with core and bound securely in place by an outer compression winding.

A hollow handle fits over the extended shank and connector terminal block. Super-flexible heater cord. Baffle plate at shank prevents free conduction of heat to handle.

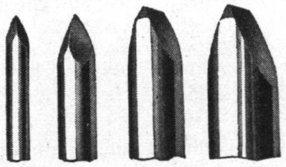
For All Standard Voltages

Furnished for 115 volts unless otherwise specified.

Nos.	**3138**	**3158**	**3178**	**3198**
Diam. tip, in.	⅜	⅝	⅞	1⅛
Length, in.	12⅞	13⅝	14⅜	15
Diam. iron, in.	⅞	1¼	1 9/16	1¾
Watts	100	200	300	550
Wt. each, lbs.	2	3	4	5¾
Each	$8.00	9.60	12.90	16.80

One in a box.

EXTRA TIPS

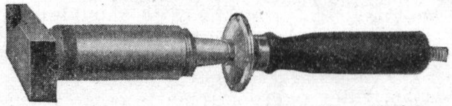


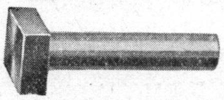
Nos.	**3738**	**3758**	**3778**	**3798**
For irons, Nos.	3138	3158	3178	3198
Wt. each, oz.	2½	7	16	28
Each	$0.50	1.10	1.90	2.20

Open stock.

BRANDING DIE BLANKS

AMERICAN BEAUTY





For Use With American Beauty Soldering Irons

Made of an alloy resistant to oxidation and wear.

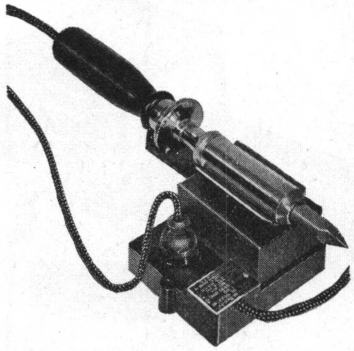
For hot branding designs, trade-marks, numbers, names, etc. on wood, leather, paper, skins, etc.

Nos.	**158-DB**	**178-DB**	**198-DB**
Fit irons, Nos.	3158	3178	3198
Die surface, in.	1x1¾	1½x2¼	2x3¼
Thickness, in.	7/16	7/16	½
Dia. shank, in.	⅝	⅞	1⅛
Length, in.	2¾	2¾	3⅜
Wt. each, lbs.	7/16	⅞	1⅞
Each	$2.80	4.00	5.60

Open stock.

SOLDERING IRON STANDS

AMERICAN BEAUTY, TEMPERATURE REGULATING



Thermostatically Controlled

A device for regulating the temperature of an electric soldering iron while at rest. When placed on this stand soldering iron is maintained at working temperature. Can be adjusted to any desired temperature from very low or warm to working temperature.

Molded plastic stand; metal cradle; equipped with cord and attachment plug-cap, designed for use with electric soldering irons up to 600 watts capacity and on circuits up to 240 volts AC.

Each

No. 475—Wt. each 1 1/16 lbs. $5.50

One in a box.

SOLDERING COPPERS

POINTED

ELECTRIC BRAND

Style H

Straight handle, shaft type; forged from pure electrolytic copper and are designed for long wear and maximum heat retention.

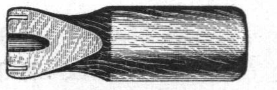
Nos.	**1**	**1½**	**2**	**3**
Wt. pair, lbs.	1	1½	2	3
Per pound	**$1.35**	**1.25**	**1.20**	**1.15**

Nos.	**4**	**6**
Wt. pair, lbs.	4	6
Per pound	**$1.15**	**1.10**

Open stock.

SOLDERING COPPER HANDLES

ANCHOR



Soft Wood, Waxed and Polished

Steel insert adds strength, yet no metal comes in contact with hand of user.

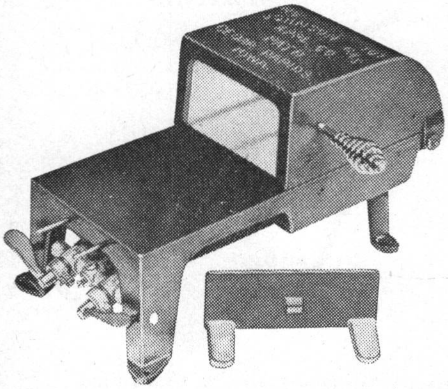
Per dozen

No. 401—4½ in. long, 1¼ in. diam.; wt. per dozen 1⅞ lbs. **$1.90**

Three dozen in a box.

GAS SOLDERING FURNACES

JOHNSON BENCH



Heavy Cast Iron Construction

The most powerful, efficient and economical bench furnace made for heating soldering coppers, heat-treating, tempering, annealing, case-hardening any carbon steel tools or small metal parts.

Equipped with shut-off valve and pilot light. The fire-box forms a rest and protects the points of the coppers. The curved shaped hood forces a return blast over the tops of the irons or parts being heated.

Gas consumption 13000 Btu per burner.

Single Burner

Heats coppers up to 6 lbs. per pair.

Each

No. 1—12 in. long, 3½x2½ in. firepot opening; shipping wt. each 16 lbs. **$21.00**

Double Burner

Complete with a work rest block for holding parts to be heated and a baffle plate which partly closes the front opening of the furnace.

Heats coppers up to 12 lbs. per pair.

Each

No. 101—14 in. long, 4½x2¾ in. firepot opening, 3¾x4½x5½ in. firebox; shipping wt. each 21 lbs. **$26.25**

Double Burner, with Melting Pot

3 in. cast iron melting pot which sets in the hood by removing lid. Capacity of pot 10 lbs.

Heats coppers up to 12 lbs. per pair.

Each

No. 105—14 in. long, 4½x2¾ in. firepot opening, 3¾x4½x5½ in. firebox; shipping wt. each 23 lbs. **$29.25**

All above, one in a box.

GASOLINE BLOW TORCHES

C & L

Mechanics' Standard

Ruggedly constructed and designed for extra severe service either indoors or outdoors under severe weather conditions.

Produces a hot blue blast 7 in. long which may be regulated for lighter work.

Burner has blunt control needle, removable jet block and detachable cleaner pin. Generator is weather protected with full skirted windshield securely fastened in place.

Heavy gauge brass tank; bottom filled; automatic pump.

Each

No. 32A—Capacity 1 qt.; shipping wt. each 5 lbs. **$14.70**

Heavy Duty

For extra heavy work. Powerful burner produces steady strong blue blast flame 10 in. in length. Flame can be regulated for ordinary work.

Burner made with removable jet block and detachable cleaner pin. Blunt control valve makes it impossible to enlarge the orifice. Has full skirted heavy windshield securely fastened in place.

Brass tank with bottom filler plug. Automatic pump.

Each

No. 327—Capacity 1 qt.; shipping wt. each 5¾ lbs. **$17.90**

C&L
No. 600A
DETROIT

For Odd Job Service

Burner made with back-flow generator; has tapered burner tube closed at the back. Produces a good sized hot blue flame.

Sharp point control needle with shoulder to resist orifice enlargement.

Heavy brass tank; bottom filler plug; automatic pump.

Each

No. 600A—Capacity 1 qt.; shipping wt. each 4½ lbs. **$9.60**

All above, one in a box.

GASOLINE BLOW TORCHES

C & L

C&L
No. 800
DETROIT

For Occasional Use

Full size bronze burner; hot blue flame 6 in. long. Sharp point control needle is provided with a shoulder to prevent orifice enlargement.

Brass tank; cool bakelite handle. Filled by removing the pump.

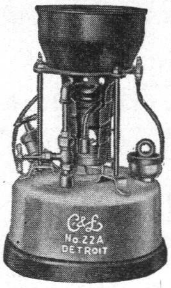
Each

No. 800—Capacity 1 qt.; shipping wt. each 4 lbs. **$8.90**

One in a box.

GASOLINE FIRE POTS

C & L



With Quick Detachable Coil

Easy to start, simple to operate. Will burn low gravity gasoline in any kind of weather.

A powerful pump produces air pressure quickly. Patented quick detachable coil unit can be replaced in 45 seconds.

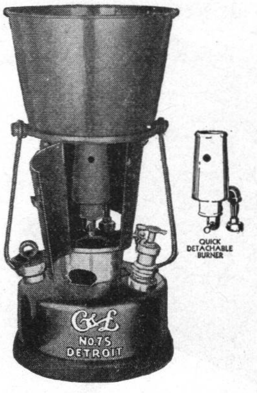
Produces a very hot blast flame of large volume. It is efficient, fast and economical for melting solder and babbitt in metal pots. Will handle a full 6 in. metal pot.

Heavy gauge seamless drawn steel tank, reinforced, tinned inside and out.

Each

No. 22A—Cap. 1 gal.; shipping wt. each 14 lbs. **$19.00**

One in a box.



Heavy Duty

Produces a very large, powerful, extremely hot blast flame which may be closely regulated by flame control device. Quickly melts 75 pounds of solder, kettle of paraffine or insulating compound. Burner can be quickly removed and a new one inserted.

Top shield 10 in. diameter.

Each

No. 75—Cap. 1 gal.; shipping wt. each 26 lbs. **$32.90**

One in a box.

MELTING LADLES

WROUGHT STEEL

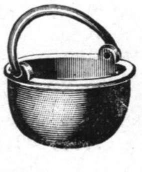
Double Lipped

Diam., in.	Each	Wt. ea., lbs.	Diam. in.	Each	Wt. ea., lbs.
2½	$1.00	½	4	$1.60	1¼
3	1.20	¾	5	2.10	2½
3½	1.40	1	6	2.40	3

Open stock.

MELTING POTS

CAST IRON



Deep Pattern

Diam., in.	6
Wt. each, lbs.	3
Each	**$2.00**

Open stock.

WIRE SOLDER

ACID-CORE

KESTER
ACID CORE
SOLDER
KESTER
ACID CORE
SOLDER

Filled with a scientifically prepared acid flux which is released in the proper proportions to do a real soldering job as the solder melts.

Flows freely and uniformly. No secondary or reclaimed metal used in its manufacture.

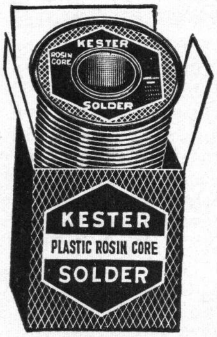
⅛ in. diam.; about 30 ft. in a pound.

40/60

Size spool, lbs.	5	20
Per pound	$ Market Price	

One spool in a box.

ROSIN CORE


KESTER
ROSIN CORE
SOLDER
KESTER
PLASTIC ROSIN CORE
SOLDER

Filled with a superior plastic rosin flux.

Will not deteriorate and leaves only a transparent residue. Prevents corrosion and electrical leakage.

.092 in. diam.; about 50 ft. in a pound.

40/60

Size spool, lbs.	1	5	20
Per pound	$	Market Price	

One spool in a box.

SOLID

NEATPAK
WIRE SOLDER
Just pull it out
ALWAYS CLEAN — NO WASTE

⅛ in. Diameter

About 20 ft. of ⅛ in. solid wire solder equals 1 pound.

For electrical and other small work.

The non-refillable Neatpak can serves the solder as it is needed, keeping the remainder clean and untangled.

In Neatpak Cans

Size cans, lbs.	Per pound 40/60	50/50
1	$	Market Price
5		

On Spools

Size spools, lbs.	Per pound 35/65	40/60	50/50
25	$	Market Price	

BAR SOLDER

FEDERATED

½ & ½
FEDERATED
½ & ½

1½ Pound Bars

Bar size 13½x¾x½ in.

	Per pound
35/65—35 parts tin to 65 parts lead; a good grade for ordinary work	$....
40/60—40 parts tin to 60 parts lead; suitable for average shop work.	....
50/50—"Half and half", 50 parts tin to 50 parts lead; tinners' refined solder for high class work; runs freely, has a low melting point.	....

100 pound in a box.

Market Price

SOLDERING PASTE

NOKORODE

NOKORODE
SOLDERING PASTE
MANUFACTURED BY
THE M.W. DUNTON CO.
PROVIDENCE, R.I.
NOKORODE
SOLDERING PASTE

Non-Corrosive

Will flux all metals except aluminum; takes the place of acid; safe as rosin and rapid as acid; not affected by heat and does not spatter.

Size cans	2 oz.	1 lb.
Cans in carton	12	6
Per can	$0.15	.70

SOLDERING SALTS

NOKORODE

NOKORODE
SOLDERING SALTS
NOKORODE
SOLDERING SALTS
THE M. W. DUNTON CO.

Non-Corrosive

Extensively used by plumbers, tinsmiths and leading manufacturers in all lines; makes perfect joints and eliminates the use of acid; has no disagreeable fumes while under heat.

Size cans, lbs.	Per pound	Cans in ctn.
1	$0.70	6
5	.56	1

ALLEN

ALLEN
SODERING SALTS

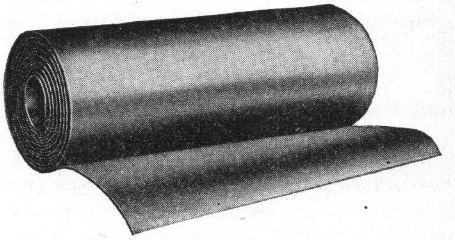
In dry concentrated form. Adding three parts water to one part salts makes a perfect flux of sufficient strength to use on old metal.

Solders all metals except aluminum. Takes a quick bite and solder holds on.

Size jars, lbs.	Per jar	Jars in carton	Wt. carton lbs.
½	$0.55	12	11
1	.80	6	11
5	3.60	1	10

SHEET LEAD

"ASARCO"



Widely and satisfactorily used for lining and flooring of acid chambers, chemical laboratories, petroleum refinery installations, plating tanks, pulp mill equipment; also for storage battery tanks, shower pans, soundproofing, tank linings, roofing, roof flashings, valley linings, sheeting under bathroom tiling, and protective shields and room linings for X-ray apparatus.

Thickness, in.	1/64	1/32	3/64	1/25
Wt. sq. ft., lbs.	1½	2	2½	3
Per pound	$	Market Price		

Thickness, in.	1/16	1/14	1/12	1/8
Wt. sq. ft., lbs.	4	5	6	8
Per pound	$	**Market Price**		

BABBITRITE

Babbitrite
PRODUCTS MFG. CO.

A Retainer for Molten Babbitt Metal

As necessary as the ladle for best results in babbitting.

"Babbitrite" has supplanted putty and clay for retaining molten babbitt metal. It comes ready for use, requiring no preparing or mixing, such as is necessary with clay or putty. "Babbitrite" will not dry out, harden or absorb moisture, being unaffected by heat. Briefly, when "Babbitrite" is used, blow outs are impossible and perfect bearings are assured at a minimum cost. Used over and over again.

Size	5 lb. can	15 lb. pail	30 lb. pail
Per pound	$0.75	.60	.525

Open stock.

SOCKET METAL

FEDERATED

Federated Metals Division
AMERICAN SMELTING AND REFINING COMPANY
FEDERATED SOCKET METAL

Made especially for the attachment of wire rope or cable to the load by means of a socket, the only known method for utilizing the full strength of the rope. Tough and sturdy, Socket metal resists strains severe enough to break the rope. Supplied in easy melting bars, free flowing, producing a sound joint.

Pouring temperature: 830° F.

Per pound

Socket Metal—2x⅞x7½ in. bar; wt. per bar 2½ lbs. ..$ **Market Price**

100 pounds in a box.

BABBITT METAL

No. 4 STANDARD HARDWARE GRADE

Federated Metals Division
AMERICAN SMELTING AND REFINING COMPANY
NO. 4 BABBITT

One of the most widely used babbitt metals for light work, as in line shaftings, dolly boxes, post-hangers, etc. where a high grade metal is not required. High lead content requires little attention or lubrication.

Pouring temperature 630° F.

Per pound

No. 4—8¾x2¼x⅞ in. bar; wt. each 5 lbs. ....$ **Market Price**

100 pounds in a box.

BABBITT METAL

BOVEALL

Federated Metals Division
AMERICAN SMELTING AND REFINING COMPANY
BOVEALL BABBITT

A utility babbitt for bearings exposed to moderate speeds and unusually heavy loads.

Boveall is an alloy of unusual antifrictional qualities owing to the peculiar grain structure developed through heat treatment. It is practically self-lubricating.

Some uses are on low speed fans, pumps, conveyors, revolving screens, tumblers, and low speed shafting.

Load carrying strength 20,000 lbs.
Pouring temperature: 900° F.

Per pound

Boveall—2x1x4 in. bar; wt. per bar about 5 lbs. ....$ **Market Price**

100 pounds in a box.

MERIT METAL

Federated Metals Division
AMERICAN SMELTING AND REFINING COMPANY
MERIT METAL BABBITT

Merit Metal is a dense, compact, durable, anti-frictional alloy for general all around babbitting requirements.

Does not pack or crush under heavy loads nor heat under high speeds as do most installations of moderate cost babbitts. Longer wearing, cooler running and lower cost service have made it the all-purpose babbitt for American industries. About one-half the cost of Copper Hard babbitt.

Recommended for: line shaft bearings, dredging machinery, coal mines, steam hoists, exhaust fans, cement plants, condensers, gas engines, pressure blowers, main bearings of pumps.

Load carrying strength 18,000 lbs.
Pouring temperature: 800° F.

Per pound

Merit Metal—2x1¼x3 in. bar; wt. per bar about 4 lbs. ..$ **Market Price**

100 pounds in a box.

BABBITT METAL

SELBY EXCELSIOR

Federated Metals Division
AMERICAN SMELTING AND REFINING COMPANY
SELBY EXCELSIOR BABBITT

A well balanced general utility Babbitt that is tough, yet economical; used where speeds are moderate and loads fairly light. Gives excellent service in light duty pumps, conveyors, car journals and similar applications.

Load carrying strength 15,500 lbs.
Pouring temperature: 700° F.

Per pound

Selby Excelsior — 2¼x⅞x8¾ in. bar; wt. per bar 5 lbs. $ **Market Price**

100 pounds in a box.

XXXX NICKEL

Federated Metals Division
AMERICAN SMELTING AND REFINING COMPANY
XXXX NICKEL BABBITT

Enjoys a reputation for service, consistent performance and ultimate economy accorded no other babbitt metal made. Into its manufacture goes far more than consistently uniform metals: the practical knowledge gained through more than half a century of alloying experience.

Tough and sufficiently hard to resist crushing that would damage less sturdy metals, Federated XXXX Nickel Babbitt is at the same time surprisingly plastic, so that it conforms to slight irregularities and misalignment. It pours freely when molten to fill all bearing crevices, yet will stand up under high operating temperatures without excessive softening. It holds the oil film, is highly anti-frictional, and will not score or cut the shaft. Has high thermal conductivity.

Its use is indicated wherever it is important to employ the highest grade of babbitt metal.

Pouring temperature: 825°–875° F.

Per pound

XXXX Nickel—2¼x⅞x8¾ in. bar; wt. per bar 4 lbs. ....$ **Market Price**

100 pounds in a box.

BABBITT METAL

COPPER HARD

Federated Metals Division
AMERICAN SMELTING AND REFINING COMPANY
COPPER HARD BABBITT

Carefully alloyed for excellent service where bearings run comparatively cool.

Used on high speed turbines, centrifugal fans, mixers, pumps, revolving screens, and high speed shafting. Cost is about 90% more than Merit Metal or Boveall.

Load carrying strength 11,500 lbs.

Pouring temperature: 650° F.

Per pound

Copper Hard—2¼x⅞x8¾ in. bar; wt. per bar 4½ lbs. $ **Market Price**

100 pounds in a box.

BABBITT METAL

SELBY DIESEL ENGINE

Federated Metals Division
AMERICAN SMELTING AND REFINING COMPANY
SELBY DIESEL ENGINE BABBITT

Developed for use in modern, high-powered Diesel engines. Ably withstands high pressures, impact and vibration without cracking or squeezing out of the bearing. Highly resistant to wear, adjustable to normal imperfections of the bearing box and shaft. Excellent results in crankpin and main journals, heavy duty tractors, since it withstands heavy pressures and shock present in bearings of internal combustion engines.

Load carrying strength 16,000 lbs.

Pouring temperature: 850°–950° F.

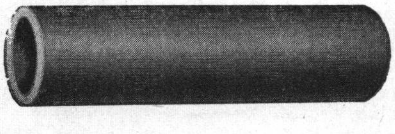
Per pound

Selby Diesel Engine—2¼x⅞x8¾ in. bar; wt. per bar 3½ lbs. ....$ **Market Price**

100 pounds in a box.

BEARING BRONZE BARS

CORED



Machined and Centered, 13 in. Long

All bars are finished on the outside and centered. Finished inside with a gun barrel finish and the bores are absolutely concentric with the outside diameter.

Free-cutting and easy to machine with ordinary bronze machining practices.

OD, in.	ID, in.	Approx. wt. each, lbs.	OD, in.	ID, in.	Approx. wt. each, lbs.
1	⅝	2	3	1	27
1¼	⅝	4	3	1¼	25
1¼	¾	3½	3	1½	23
1⅜	⅝	5	3	1¾	20
1⅜	⅞	4¾	3	2	16½
1½	⅝	6½	3	2¼	13½
1½	¾	5½	3¼	1¼	30
1½	1	4½	3¼	1½	27½
1⅝	⅝	7½	3¼	1¾	25
1⅝	⅞	6½	3¼	2	22
1⅝	1⅛	5	3¼	2¼	19
1¾	¾	8	3½	1	37½
1¾	1	7	3½	1½	33
1¾	1¼	5½	3½	1¾	31
1⅞	⅞	9	3½	2	29
1⅞	1⅛	8	3½	2¼	25
1⅞	1⅜	6	3½	2½	21
2	⅝	12	3¾	1½	40
2	¾	11½	3¾	1¾	37½
2	1	10	3¾	2	34
2	1¼	8½	3¾	2¼	30½
2	1½	6	3¾	2½	27
2⅛	⅝	14	3¾	2¾	22½
2⅛	⅞	12½	4	1½	45
2⅛	1⅛	11½	4	2	39½
2⅛	1⅜	9½	4	2½	33½
2⅛	1⅝	7	4	3	24½
2¼	¾	15	4¼	1¾	50
2¼	1	13½	4¼	2	46
2¼	1¼	12	4¼	2½	40
2¼	1½	10	4¼	3	31
2⅜	1⅝	10½	4¼	3¼	25½
2⅜	1⅞	7½	4½	1½	62
2½	¾	19½	4½	2	54
2½	1	17½	4½	2½	46
2½	1¼	16	4½	3	38
2½	1½	14	4½	3½	30
2½	1¾	11	4¾	2¾	50
2⅝	1⅜	17	4¾	3¼	41
2¾	¾	24	5	2	69
2¾	1	22	5	2½	61
2¾	1¼	20	5	3	52
2¾	1½	18	5	3½	44
2¾	1¾	15½	5½	2½	78
2¾	2	12¼	5½	3¼	66
2⅞	1⅝	19½	5½	3½	61
2⅞	2⅛	13	6	3	89½
			6	4	74

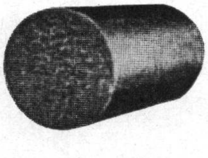
SOLID

OD, in.	Approx. wt. each, lbs.	OD, in.	Approx. wt. each, lbs.	OD, in.	Approx. wt. each, lbs.	OD, in.	Approx. wt. each, lbs.
½	1	1⅜	6½	2¼	17	3½	41
⅝	1½	1½	7½	2⅜	19½	3¾	47
¾	2	1⅝	8½	2½	21½	4	53
⅞	2¾	1¾	10¼	2⅝	23½	4½	67
1	3½	1⅞	11½	2¾	25½	5	82
1⅛	4½	2	14	2⅞	27	5½	98
1¼	5½	2⅛	15	3	30	6	118
				3¼	35½		

Market Price

CAST IRON BUSHINGS

SOLID



12 in. Lengths

Made of fine grade of gray iron.

Diam., in.	Per pound	Wt. each, lbs.	Diam., in.	Per pound	Wt. each, lbs.
¾	$0.40	2.5	3	$0.26	26.0
1	.40	3.5	3¼	.24	29.0
1¼	.38	5.0	3½	.24	33.0
1½	.38	8.0	3¾	.24	38.0
1¾	.38	9.5	4	.24	43.0
2	.38	11.0	4½	.22	54.0
2¼	.26	14.5	5	.22	68.5
2½	.26	18.0	5½	.20	80.0
2¾	.26	21.5	6	.20	96.0

CORED

12 in. Lengths

Cast iron cored bushings can be supplied from 1¾ in. OD to 12 in. OD with core sizes ranging from ¾ to 8 in.

Core sizes increase by the following increments: ¾ to 2 in. by ⅛ in., 2 to 4 in. by ¼ in., and over 4 in. by ½ in.

Prices on Request

ROUGH BRONZE BUSHINGS

PEARO-BRONZE, CORED AND SOLID

Unfinished; 12 in. Lengths

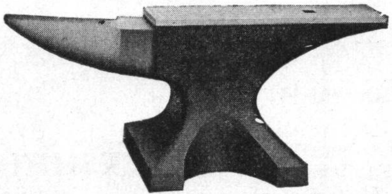
A superior bearing stock of special formula designed to reduce bearing failures under severe service and faulty lubricating conditions.

The rough bars are furnished in size that will finish to dimensions shown in the listing of finished bronze bushings. When ordering rough bronze bars be sure to specify, "Rough unfinished bars to finish to . . . . ;" and then give finished sizes.

Market Price

ANVILS

BLACKSMITHS' PATTERN



Special High Grade Tool Steel

Forged from new solid billets.

Long, perfectly shaped horn and long heel. Base designed for stability; faces level and true; hardie holes and all mechanical details of exact accuracy.

Wt. each, lbs.	Each	Face, in.	Length horn, in.	Waist, in.	Heel and drop, in.	Size hardie hole, in.
100	$ 7.20	2⅜x14	9¾	5	13/16	⅞
125	88.10	3½x15½	10½	5¼	⅞	15/16
160	112.35	4 x17½	11½	5½	15/16	1
200	140.40	4¼x19	12	6	1	1 1/16
225	146.50	4½x19½	12½	6½	1 1/16	1 1/16

Open stock.

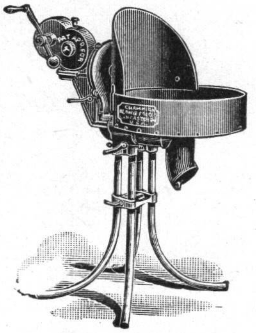
Note—Other sizes from 10 to 1000 lbs. available.

SWEDISH STEEL ANVILS

Available in all weights for direct shipment from factory.

FORGES

CHAMPION, BALL BEARING



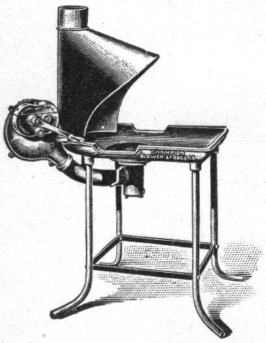
With Shield

A steel rivet forge for structural work, railroad work, bridge builders and boiler workers. High speed spiral gearing. Crank turns either way to make the blast. Each turn of crank produces 46 complete revolutions of the fan wing. Adjustable ball bearings.

Each

No. 401—18 in. diameter round hearth, 30 in. high, 9 in. diameter fan; wt. each 135 lbs. . . **$106.50**

CHAMPION EUREKA, GEARED

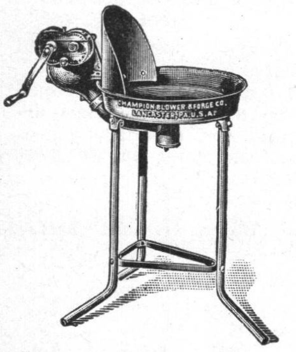


With Half Hood

For machinists, garages, etc. Cut gears run in oil in oil-tight dust-proof gear case; supplied with heavy nest ball tuyere iron; oblong pressed steel hearth. Crank turns either direction to produce blast; 48 revolutions of blast wheel to one turn of crank.

Each

No. 143S—24x5x3 in. hearth, 30 in. high, 12 in. diameter fan; wt. each 145 lbs. **$82.50**


CHAMPION BLOWER & FORGE CO.
LANCASTER, PA. U.S.A.

With Shield

Pressed steel hearth. Fan is driven by machine-cut helical gears running smoothly and noiselessly in a dust-proof, oil-tight gear case. Strongly braced legs are bolted to the hearth.

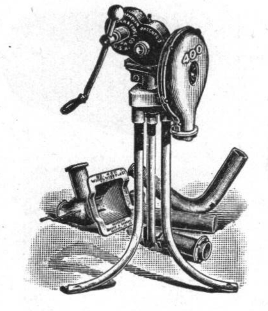
Each

No. 145-S—18 in. round hearth, 30 in. high, 8 in. diameter fan; wt. each 45 lbs. **$30.00**

All above, open stock.

BLOWERS

CHAMPION 400, GEARED



Ball Bearing, Adjustable

Champion patented high speed spiral gearing, ball bearing throughout.

Each turn of the crank either way, produces 46 complete revolutions of the fan wing. The 400 "Whirlwind" blast anti-clinker heavy nest tuyere iron produces a circular, rotary, white heat blast which heats iron at least one-third quicker and with an equal saving in coal, as no heat is wasted by being blown up the chimney.

Complete with tuyere iron and piping.

Each

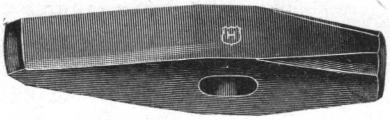
No. 400—12 in. fan; wt. each 160 lbs. **$106.50**

Open stock.

Note—Above blowers make for either right or left hand fires. Right hand blowers always furnished unless otherwise specified.

BLACKSMITHS' CHISELS

COLD CUTTING



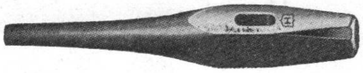
No. 282—Oval Eye

Wt. each, lbs.	Each	Lgth. over all, in.	Bit, in.	Stock at eye, in.	Size eye, in.
2	$2.80	6	1¼	1¼	⅝x1
3	3.55	7	1½	1½	¾x1⅛
5	5.50	8	1¾	1¾	¾x1¼

Open stock.

BLACKSMITHS' PUNCHES

ROUND



No. 500

Diam. punch, in.	Each	Length over all, in.	Stock at eye, in.	Size eye, in.	Wt. ea., lbs.
½	$2.45	7½	1¼	⅝x1	2
⅝	2.80	7¾	1⅜	¾x1⅛	2¼
¾	2.95	8	1⅜	¾x1⅛	2½
⅞	3.30	8¼	1½	¾x1⅛	3

Open stock.

CASEHARDENING COMPOUND

KASENIT

KASENIT
No. 1.

Open Fire

Non-poisonous. Non-explosive, non-inflammable.

A rapid compound for surface hardening. May be used with good results on all classes of steel, as well as cast, wrought or malleable iron. No special equipment necessary.

The compound melts under moderate heat, spreading itself over the entire surface to be hardened, forming a shell all over, thus eliminating the danger of soft spots or any tendency to warp.

Ordinary case is given in a few minutes and a deeper penetration is easily obtained by longer period of heating, because of its carbonaceous base and energizer (a special Kasenit feature).

Used in many large engineering works, machine shops and railroads, and is found entirely satisfactory and economical.

No. 1 Grade

For fine work and very rapid hardening.

Size cans, lbs.	1	5
Cans in carton	12	6
Wt. per carton, lbs.	16	36
Per pound	$3.35	3.05

No. 2 Grade

For general casehardening.

Per pound

No. 2—Over 25 lbs. **$2.00**

BLACKSMITHS' COAL

HIGH GRADE

BLACKSMITH COAL

In Sacks

A superior quality smithing coal.

Sacking preserves the strength, prevents all waste and is cleaner, easier and cheaper to handle. Used in all forges by all workers in iron and steel.

Per 100 pounds

100 lb. Sacks **$3.00**

WELDING COMPOUND

E-Z

FOR ALL GRADES OF STEEL
TRADE
E-Z
MARK
WELDING COMPOUND

Adheres to metal at a low heat and is equally good for lap, split butt or jump welding; makes a strong and smooth weld, welds steel as easily as iron.

Will weld tool steel, plow steel, spring steel axles or steel tires.

Size box, lbs.	5	25
Per 100 lbs.	$26.25	25.75

CLIMAX

CLIMAX WELDING COMPOUND
TRADE MARK
REGISTERED AUG. 22, 1925

Has no equal for tires, axles, springs and all general welding. Welds steel at the lowest possible heat. Causes steel to weld like iron. A compound designed to be applied between the lap.

Size box, lbs.	5	10	25
Per 100 lbs.	$26.25	26.25	25.75

CHERRY HEAT

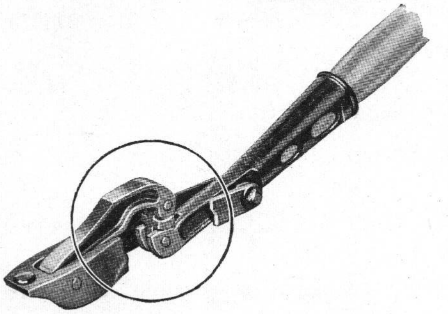
The Best Flux known for Welding
Cherry Heat Welding Compound
TRADE MARK
REGISTERED AUG 27 1905
IRON to IRON
STEEL to STEEL
And MALLEABLE Iron to Steel

All that its name implies. Welds steel at the lowest possible heat. Adapted for general welding. Applied between the lap. For welding iron to iron, steel to steel or malleable iron to steel.

Size box, lbs.	5	10	25
Per 100 lbs.	$26.25	26.25	25.75

CAR MOVERS

STREAMLINE "ATLAS"



Compound Leverage

Malleable iron and steel construction with double spurs and rail guides. Spurs have four edges and are reversible. Will straddle a 160 lb. rail.

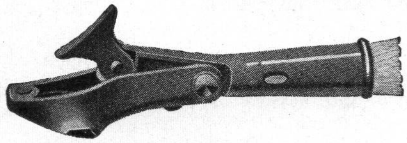
Superior in power and speed.

	Each
No. SX—6 ft. long; selected hardwood handle; wt. each 20 lbs.	$18.00
Extra handle	5.00
Extra double spurs—½x1¼ in. Per pair	1.00

Open stock.

Note—Handles and spurs also fit New Badger.

NEW BADGER



Slip-Proof; Compound Leverage

Light and well balanced. Easy to handle and transport from place to place. Compound leverage provides a powerful forward thrust that will move any car. Certified malleable iron castings of the very highest tensile and ultimate strength. Slip-proof double constructed spurs made of special steel rolled for the purpose and carefully hardened and oil drawn.

Selected hardwood handle.

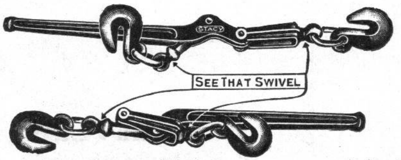
	Each
No. 5—70 in. long; wt. each 18 lbs.	$18.00
No. 20—Extra handle	5.00
No. 22—Extra spurs, slip-proof, double constructed Per pair	1.00

Open stock.

Note—Handles and spurs also fit "Atlas."

LOAD BINDERS

STACY IMPROVED SWIVEL



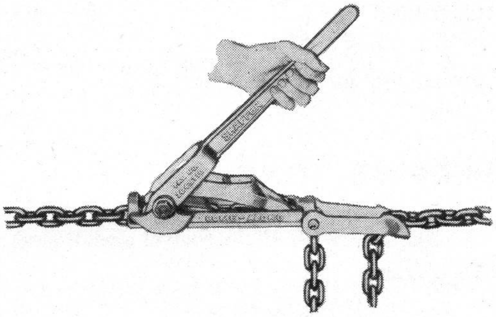
Malleable Iron

Swivel on each hook prevents twisting and consequent breaking of the chain. Used to bind loads of logs, lumber, hay, pipe, poles, etc.

All sizes will take up over 4 inches of slack. Natural finish.

Models	Per pair	Length handle, in.	Use with chain, in.	Wt. pair, lbs.
Midget	$ 4.05	12	$\frac{3}{16}$–¼	5
Regular	7.40	19	$\frac{5}{16}$–⅜	14
Jumbo	8.80	20	⅜–½	20
Special	11.10	22	½–⅝	28

SHAFFER "COME-ALONG"



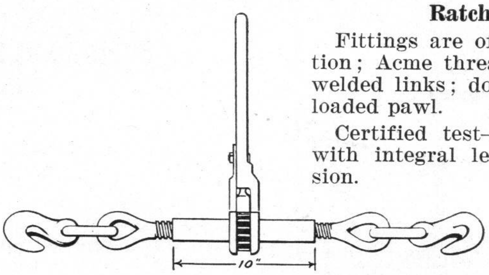
"Promal" Alloy Castings

Stronger than malleable or cast iron. Has a high yield point and offers a fine bearing surface for moving parts. BBB high test chain, grab hook on one end, ring on other end.

Has innumerable uses as a puller and hoist in addition to being a superior load binder.

Models	Each	Lgth. travel, in.	Lgth. chain, ft.	Size chain, in.	Tested to lbs.	Wt. each, lbs.
Midget	$ 6.50	37	4	¼	2000	10
Standard	11.55	47	5	⅜	6000	32
Heavy Duty	15.00	60	6	$\frac{7}{16}$	8000	35

AMERICAN FORGE



Ratchet Type

Fittings are of all-steel construction; Acme threaded screws; forge welded links; double acting spring-loaded pawl.

Certified test—manual operation with integral lever, 8500 lbs. tension.

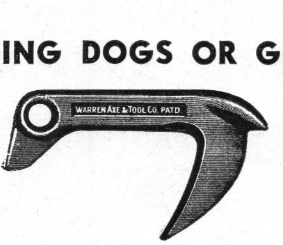
Will easily meet the specifications of the chain it is bound with.

Barrel length 10 in.; take-up, full 8 in.; weight each 13 lbs.

Size hook, in.	⅜	½	⅝
Each	$13.00	13.30	13.85

Note—Special barrel lengths furnished to your specifications.

LOGGING DOGS OR GRABS


WARREN AXE & TOOL CO. PATD.

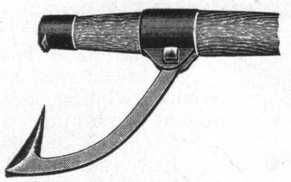
Improved Bull Dog

Forged from highest quality crucible analysis steel. Easily driven and easily extracted.

	Per pair
No. 279—Size 2; for trailing and is also a popular size with many for soft woods, length over all 7¾ in., depth of tooth 3½ in.; wt. per pair 4½ lbs.	$1.10

All above, open stock.

CANT HOOKS



With Duck Bill Hook

Malleable clasp and short toe ring.

Selected straight grained, air-seasoned maple handle.

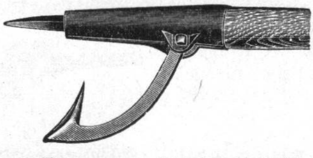
Nos.	D-220	222	223
Diam. handle, in.	2¼	2½	2½
Length handle, ft.	3	4	4½
Wt. dozen, lbs.	70	85	90
Per dozen	$54.00	59.40	61.20

EXTRA HANDLES

Nos.	B-2134	2136	2137
Wt. dozen, lbs.	36	42	47
Per dozen	$18.60	25.20	27.60

Open stock.

PEAVIES



Western Pattern; with Duck Bill Hook

Malleable hook, solid socket, pick and bolt.

Straight grained, air-seasoned maple handle.

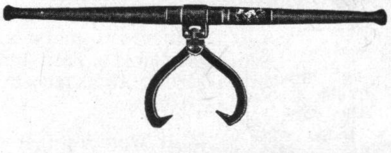
Nos.	3206	3207
Diam. handle, in.	2½	2½
Length handle, ft.	4	4½
Wt. dozen, lbs.	110	116
Per dozen	$76.20	78.60

EXTRA HANDLES

Nos.	1136	1137
Wt. dozen, lbs.	42	47
Per dozen	$26.40	32.40

Open stock.

TIMBER CARRIERS



With Chisel Point Hooks

High carbon steel hooks and clasp. Annealed malleable swivel to permit handling timber in narrow places. Best second growth maple handle.

Per dozen

No. 609—4½ ft. handle, will handle square timber up to 16 in.; wt. per dozen 100 lbs. **$72.00**

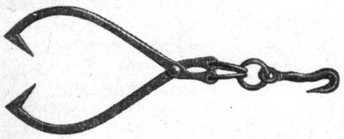
EXTRA HANDLES

Per dozen

No. 1184—Wt. per dozen 40 lbs. ..**$27.60**

Open stock.

SKIDDING TONGS



With Plain Swivel and Round Hook

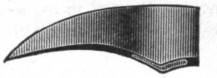
High carbon octagon steel, with upset points.

Nos.	B149	149
Size steel, in.	¾	1
Opens, in.	16	24
Wt. per pair, lbs.	7½	15
Per dozen	$113.00	150.00

Open stock.

Note—Log rules shown with other rules. Refer to index.

HOOKAROON HEADS



Heavy Pattern

Forged from one piece high carbon steel. Eyes are punched for axe handles.

Per dozen

No. 95—8¾ in. long; wt. per dozen 30 lbs. **$24.60**

Open stock.

HOOKAROON HANDLES

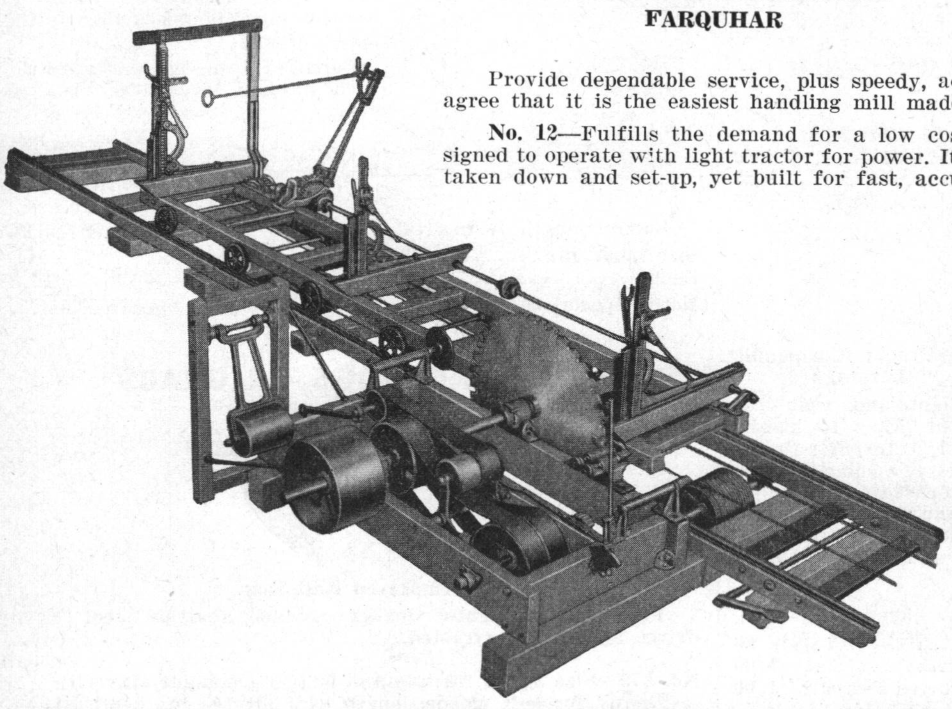
(SINGLE BIT AXE)

Nos.	MS126	MS226
Length, in.	36	36
Wt. dozen, lbs.	20	20
Per dozen	$16.80	14.00

One dozen in a carton.

PORTABLE SAWMILLS

FARQUHAR



Provide dependable service, plus speedy, accurate and economical operation. Operators agree that it is the easiest handling mill made.

No. 12—Fulfills the demand for a low cost, easy-to-handle headblock type mill, designed to operate with light tractor for power. It is a light weight mill, easily and quickly taken down and set-up, yet built for fast, accurate cutting. A top performer in the low priced field. Has a sawing capacity of 3000 to 7000 board feet per day, depending upon the power used.

No. 9—(Illustrated). All roller-bearing. Preferred by mill operators engaged in regular and constant sawing of medium sized or heavy timber. Capacity 4000 to 12000 board feet per day.

No. 5—Medium size, producing 6000 to 15000 board feet per day. Roller bearing; built to stand severe service. Double belt feed; cable drive.

No. 3—Heavy duty; 7000 to 20000 board feet per day. Built strong and rigid for accurate and efficient sawing of large timber.

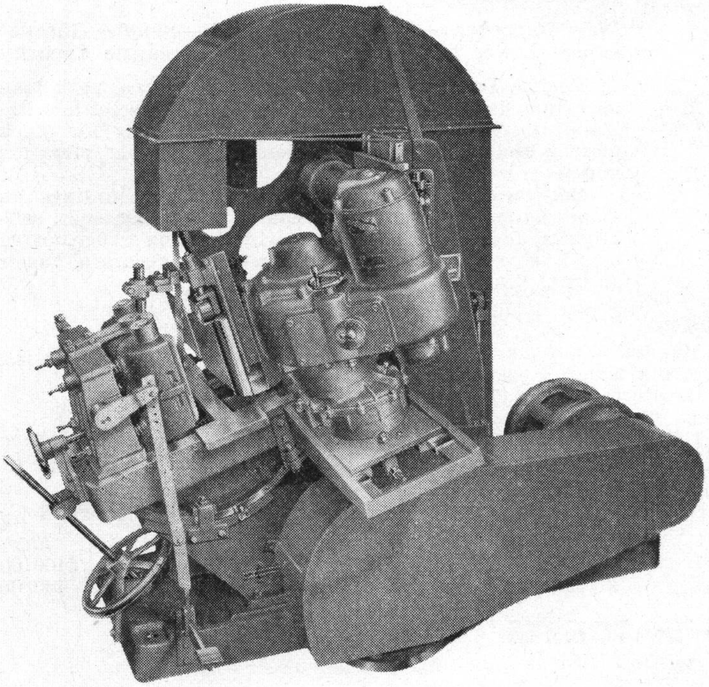
No. 1—The finest and most rugged portable heavy duty sawmill. Large and of tremendous strength. Capacity 10000 to 25000 board feet per day. Roller bearing.

Complete Information and Prices on Request

Note—All Mills Furnished right hand unless otherwise specified.

SINGLE BAND RESAWS

TURNER, SHORT-COUPLED, HIGH SPEED, TILTING



No. TSR-42—Arranged for Extreme Tilt of Feed Rollers

Precision Built

The Turner Band Resaws are built under the strictest supervision and are precision-built machines. They will with ordinary care give many years of real service with the least amount of replacements or annoyances from breakdowns.

Few Wearing Parts

The Turner Resaws have fewer wearing parts than any other Resaw. The parts which ordinarily require replacement are standard and used by leading manufacturers in building their various lines of specialized machinery. Replacement parts are therefore readily obtainable from practically every machinery supply house and hardware store. This is an insurance against unnecessary delays to users of Turner Band Resaws.

Distinct Evolution

A survey of the Turner Band Resaws reveals the absence of intricate mechanical movements and the comparatively few working parts employed in their construction.

Massive Construction

The base casting is made extremely heavy, well ribbed for rigidity, supporting the columns, which are heavy, one-piece box castings with 12 in. wide dovetail ways that carry the top wheel mechanism. The upper and lower spindles are extra large (see illustration) to prevent the slightest distortion or misalignment when saws are under severe strain. The spindles in turn are carried in large oversize roller bearings, in dust-proof housings, running in grease, thus insuring long life.

Maximum Tilt

Especially designed and built for maximum tilt of the feed rolls. In moulding plants and other specialty plants this machine effects enormous savings in materials. Very thin saws can be used, at the same time maintaining fast rates of feed.

Wheel Shafts

The wheel shafts are ground fits and are mounted in large, oversize roller bearings, which are enclosed in dust-proof housings. The short wheel centers are massive construction, together with the utmost care used in balancing and other details of design and construction, makes the Turner No. TSR-42 a most outstanding Single Resaw.

Great Savings

Fast feeds up to 300 feet per minute, at the same time using extremely thin saw blades, effects great savings in kerf and adds to production.

Minimum Floor Space

The drive motor is mounted directly behind the upright column and drives to the lower wheel shaft by a V-Belt Tex Rope Drive. The entire machine is self-contained and requires little floor space.

Short Wheel Centers

Designed to use the shortest possible saws, and is so constructed that the stock is passed through the saw as near the top wheel as conveniently possible, thereby insuring rapid rates of feed plus accurately manufactured stock. The flutter and chatter which were common to older types of band Resaws are practically eliminated.

Increased Volume

The Turner Single Resaw embodies many new and important features, resulting in the production of a higher grade of stock with an increased volume of output.

Simple Adjustment

Much care was taken in the design of this Single Resaw to assure quick, accurate adjustments. Hand wheels are provided and are so placed as to be within easy reach of the operator. No wrenches are needed for adjustments.

Saw Tension

The saw tension device is a combination fulcrum and spring which is exceedingly sensitive.

Rolls

The rolls open to 8 in. wide, 4 in. to the right and 4 in. to the left of the saw blade. The machine will resaw 14 in. stock. The saw blades are 5 in. wide, 22 to 19 ga., 19 ft. 6 in. long.

Feed

The feed consists of four 6 in. diam. rolls driven by a separate multi-speed geared-bead motor. The rolls tilt from a vertical position to a 35 degree angle.

TURNER MODELS ADAPTED TO PRESENT DAY RESAW REQUIREMENTS

Turner Machinery Co. has long held to a policy of concentrating on a comparatively small number of models best adapted to current industry needs. Additional models will be added as new industry needs arise. At present Turner has available for easy shipment, 13 types of Resaw equipment:

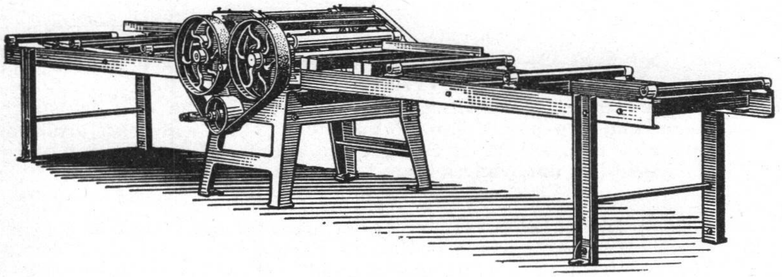
- 42 in. Tilting Single Band Resaw
- 42 in. Single Band Rip Saw
- 42 in. Twin Band Resaw with Beveling and Rounding Attachment
- 42 in. Twin Band Resaw with Ripping Attachment
- 48 in. Tilting Band Resaw
- 48 in. Twin Band Rip Saw
- 48 in. Standard Twin Band Resaw
- *52 in. Tilting Single Band Resaw
- 52 in. Standard Twin Band Resaw
- 52 in. Standard Single Band Resaw
- 62 in. Horizontal Band Resaw
- *62 in. Vertical Single Band Resaw

*These models equipped with self-centering feed rolls.

Complete Information and Prices on Request

GANG EDGERS

TURNER "PRECISION-BUILT," TWO-SAW



New Ruggedness—Easier Adjustments—Simpler Maintenance—Lower Operating Costs—More Accurate Capacity

Designed for longer, smoother, trouble-free, peak load operation. Built throughout of cast iron and steel to withstand rugged treatment. Comes in 3 sections for quick moving and setting up. Precision parts prevent vibration and wear and tear.

Ball bearing fittings, in self-aligning mountings on mandrels and feed rolls. Automatic pulley tightener, self-aligning features, finely registering cutting gauge, extra length of rear table, provide smoother, accurate, faster cutting.

Specifications

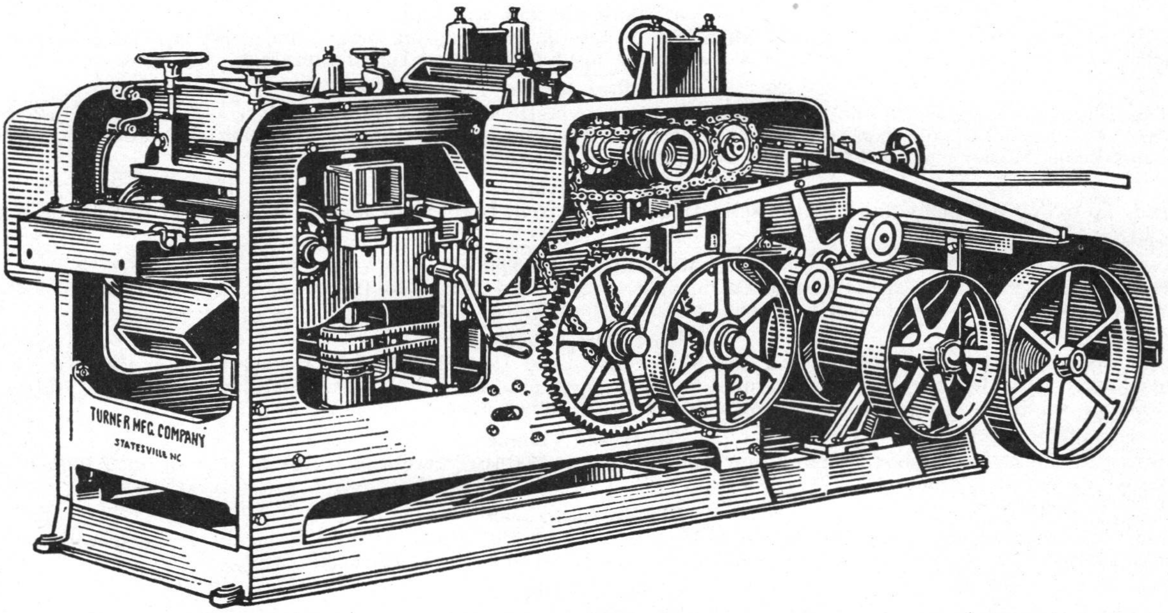
Speed, RPM	1500–1800
Power required, HP, depending on type, condition and thickness of lumber	10 and up
Feed capacity, lineal ft. per minute at 1800 RPM	90
Max. width of stock received, in.	25
Max. thickness of stock received, in.	2½
Standard saw, in. (10 ga. inserted tooth)	14

Mandrel diam., in.	1$\frac{15}{16}$
Width mandrel over all, in.	50
Greatest distance, between saws, in. (when stationary saw is 2 in. from guide)	17
Drive pulley, in.	8 dia. x 6½ face
Feed belt, in.	3x104
Length over all, ft.	18¼
Width table, in.	33

	Each
Turner Two-Saw Gang Edger—Less saws; wt. each 1500 lbs.	$400.00
—With saws	460.00

PLANERS AND MATCHERS

TURNER No. 40



Six Roll, V-Belt Drive

A rugged, ball, bronze and roller-bearing, V-belt drive Planer and Matcher of engineering simplicity. For practical millmen requiring low-cost, reliable production of up-to-four sides general dressing, flooring, ceiling, siding, and other millwork.

Regular Equipment

Four 20 in. knives for round top head; four 18 in. knives for round, bottom head; four 4$\frac{5}{32}$ in. knives for round side heads, with all necessary bolts and case hardened nuts. Hoods for all heads; "B" size V-belts for driving heads; necessary wrenches.

Floor space required, 8 ft. long by 4 ft. wide.

Range

With standard equipment No. 40 Planer and Matcher will:
- Single surface 20 in. wide
- Double surface 18 in. wide by 6 in. thick
- Dress four sides 4x12 in.
- Handle stock ½ to 6 in. thick
- Feed (two rates) 65 to 75 lineal feet per minute

Operation

	RPM	Width, in.	Diam., in.	Size shaft, in.
Round top head	5500	20	5⅛	1¾
Round bottom head	4800	18	5⅛	1¾
Round side head	4800	4	5½	1⅜
Countershaft	1150	..	1$\frac{11}{16}$	...

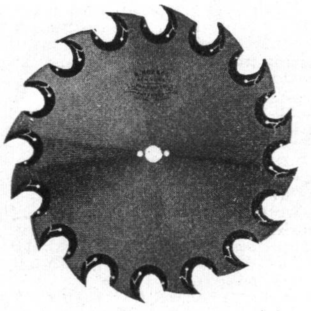
Horsepower required—Dressing 2 sides, 25 to 40 HP
—Dressing 4 sides, 40 HP or more

	Each
No. 40—Planer and Matcher, complete; shipping wt. each 4600 lbs.	$3875.00

Special Side Heads and Knives—Information and Prices Furnished on Request

CIRCULAR SAWS

INSERTED CHISEL TOOTH



Require less power than solid tooth saws and are far more economical to operate.

Bits are of even temper and uniform finish. They do not split when inserted nor break when used.

Saws with No. 2½ teeth are designed for heavy feeds, such as "Shot Gun" and are used for both hard and soft wood, and frozen timber.

Saws with No. 3 teeth have a good all-around tooth size, especially adapted for mills or ordinary capacity cutting not over 4 in. feed.

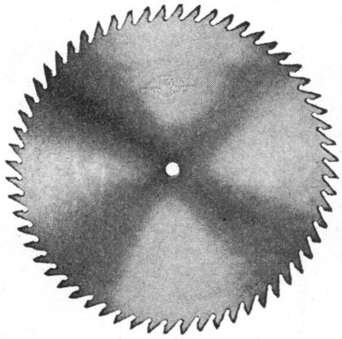
One wrench given with each saw.

Diam., in.	Thick. gauge at rim	Price each, No. 2½	Price each, No. 3	Extra for each gauge heavier	Price beveling new saws, per gauge	Size hole, in.	No. 2½ Std. No. teeth	No. 2½ Greatest No. teeth	No. 3 Std. No. teeth	No. 3 Greatest No. teeth	App. wt. each, lbs.
10	12	$27.00	$.....	$0.20	$0.45	1	10	10	..	..	2¼
12	11	32.00	.....	.30	.55	1	12	12	..	..	3
14	10	37.00	.....	.40	.65	1⅛	14	14	..	..	4
16	10	43.00	39.00	.50	.75	1⅛	16	16	12	12	6
18	10	49.00	44.00	.60	.90	1¼	18	20	14	14	8
20	9	55.00	50.00	.75	1.05	1 5/16	20	22	14	16	10
22	9	61.00	56.00	.90	1.20	1 5/16	22	24	16	18	13
24	9	68.00	62.00	1.05	1.35	1⅜	24	26	18	18	15
26	9	75.00	68.00	1.25	1.55	1⅜	26	28	18	20	18
28	9	82.00	74.00	1.50	1.75	1½	28	30	18	22	24
30	9	90.00	80.00	1.75	1.95	1½	30	32	20	24	27
32	8	100.00	88.00	2.00	2.15	1⅝	32	34	22	26	40
34	8	110.00	97.00	2.25	2.35	1⅝	34	36	22	28	40
36	8	120.00	106.00	2.60	2.55	1⅝	36	38	24	30	45
38	8	130.00	115.00	3.00	2.75	1⅝	38	42	24	32	49
40	8	140.00	125.00	3.40	2.95	2	40	44	26	36	54
42	8	150.00	137.00	3.80	3.25	2	42	46	28	38	62
44	8	165.00	150.00	4.40	3.55	2	44	50	30	42	65
46	8	180.00	165.00	5.15	3.85	2	46	52	32	44	72
48	8	200.00	180.00	5.90	4.15	2	48	54	34	46	80
50	8	220.00	200.00	6.65	4.45	2	50	56	36	48	90
52	7	245.00	220.00	7.40	4.80	2	52	60	38	50	96
54	7	275.00	250.00	8.80	5.15	2	54	62	40	52	100
56	7	310.00	280.00	10.25	5.50	2	56	64	42	54	108
58	7	340.00	310.00	11.75	5.95	2	58	66	44	56	120
60	7	375.00	340.00	13.45	6.40	2	60	70	46	58	136

No extra charge for saws one gauge thicker than list. No extra charge for saws one to three gauges thinner than list. When more than three gauges thinner, add 5 per cent to list for each gauge. Saws 48 in. and under, more than two gauges thinner than list not warranted. Saws 50 to 60 inches in diameter thinner than 10 gauge not warranted. Saws 42 in. or less in diameter beveled one gauge without extra charge; 44 in. or larger beveled two gauges without extra charge.

CIRCULAR SAWS

SOLID TOOTH



Cross-Cut or Rip

High grade steel, free from flaws and seams. Will run true and cut straight at the proper operating speeds.

These saws are easy to file, but at the same time are exceedingly hard and tough; take a perfect swage and do not lose their points easily.

Filed and set, ready for use.

Note—When ordering, specify if Cross-Cut or Rip is wanted and Bore.

Diam., in.	Base gauge	Size hole, in.	Each	Extra for each gauge heavier	Beveling new saws, extra per gauge	Wt. each, lbs.
6	18	¾	$ 4.03	$0.09	$0.30	½
8	18	⅞	5.36	.12	.43	¾
10	16	1	6.83	.25	.55	1½
12	15	1	8.52	.36	.68	2¼
14	14	1⅛	10.37	.49	.79	3½
16	14	1⅛	12.81	.61	.91	4¾
18	13	1¼	15.24	.73	1.09	6¾
20	13	1 5/16	18.30	.91	1.29	8½
22	12	1 5/16	21.32	1.09	1.47	11¾
24	11	1⅜	24.99	1.29	1.65	15½
26	11	1⅜	29.25	1.52	1.89	18
28	10	1½	34.16	1.83	2.13	23½
30	10	1½	39.03	2.13	2.38	26¾
32	10	1⅝	44.53	2.44	2.63	31
34	9	1⅝	49.99	2.74	2.87	38
36	9	1⅝	57.33	3.17	3.11	43
38	9	1⅝	65.85	3.67	3.35	48
40	9	2	75.63	4.15	3.60	53
42	8	2	86.61	4.64	3.97	65
44	8	2	101.24	5.37	4.33	72
46	8	2	119.54	6.28	4.69	78
48	8	2	136.63	7.20	5.06	85
50	7	2	154.93	8.11	5.43	101
52	7	2	173.23	9.02	5.85	109
54	7	2	191.52	10.74	6.28	117
56	7	2	219.57	12.51	6.71	122
58	7	2	243.91	14.34	7.25	135
60	6	2	273.26	16.16	7.81	163

All saws of odd diameters not listed take list of next larger size.

No extra charge for saws one gauge thicker than list.

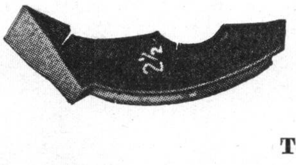
No extra charge for saws one to three gauges thinner than list; when more than three gauges thinner than list, add five per cent for each gauge.

Saws 42 inches or less in diameter beveled one gauge without extra charge; 44 inches or larger beveled two gauges without extra charge.

Saws hollow or concave ground, add for each gauge hollow or concave ground, double the list for beveling.

Saws for cutting bone, horn, ivory, pearl, bakelite, celluloid, fibre, formica, micarta, paper, rubber and similar materials, prices on application.

INSERTED SAW TEETH AND SHANKS



Teeth or bits with drop-forged groove are assured an absolute central bearing in the plate, giving uniform clearance and consequent longer wear, and are of even temper and uniform finish. They do not split when inserted, nor break when used.

Teeth or Bits

No. 2—For Atkins No. 2 and Disston No. 4½ saws.
No. 2½—For Hoe No. 2½, Simonds No. 2½, Atkins No. 2½ and Disston No. 6 saws.
No. 3—For Hoe No. 3, Simonds No. 3, Atkins No. 3 and Disston No. 7 saws.
No. 33—For Disston No. 33 saws.
No. 44—For Disston No. 44 saws.
No. 6—For Disston No. 3 1902 style saws.
No. B—For Simonds B, D and F saws.

	Per 100
All Nos.—9/32 in. and narrow	$8.30
All Nos.—5/16 to 7/16 in. wide	8.70

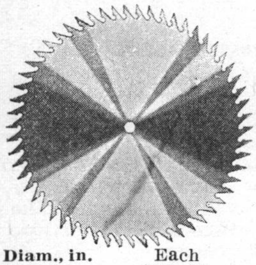
Shanks

No. 2—For Atkins No. 2 and Disston (3rd size) No. 4½ saws.
No. 2½—For Hoe No. 2½, Simonds No. 2½, Atkins No. 2½ and Disston No. 6 saws.
No. 3—For Hoe No. 3, Atkins (2nd size) No. 3, Simonds No. 3 and Disston No. 7 saws.
No. 4—For Atkins No. 4 and Disston No. 8 saws.
No. 33—For Disston No. 33 saws.
No. 44—For Disston No. 44 saws.
No. 6—For Disston No. 3 1902 style saws.
No. B—For Simonds style B saws.
No. D—For Simonds style D saws.
No. F—For Simonds style F saws.

	Each
All Nos.	$0.80

All above, open stock.

CORDWOOD CIRCULAR SAWS



Made of special steel. Satisfactory for farm work and similar purposes.

Set and hand filed.

Diam., in.	Each	Gauge	Arbor, in.	No. of teeth	Wt. each, lbs.
24	$10.40	11	1⅜	60	13
26	12.15	11	1⅜	64	16
28	13.20	10	1⅜	70	21
30	16.20	10	1⅜	76	24½

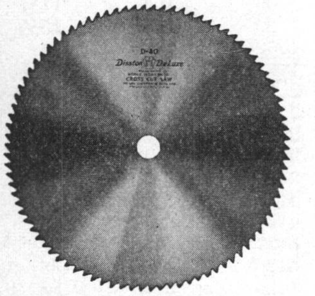
Open stock.

HOME WORKSHOP CIRCULAR SAWS

DISSTON DELUXE, FOR WOOD

Made of Disston steel by Disston craftsmen, working to Disston standards. Correct hardening and tempering are insured by exact methods of heat control, developed by long experience and practice.

All types have a high finish, keen teeth and are accurately fitted.

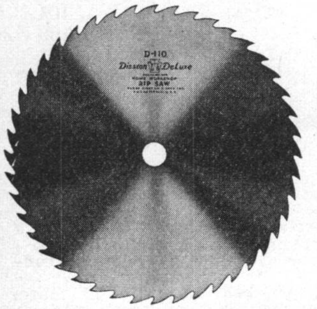


No. D-40—Cross Cut or Cut-Off

Used for cutting across the grain of the wood.

Diam., in.	Each	Thickness, ga.	Hole, in.	Wt. each, lbs.
6	$3.60	18	½	1
7	4.20	18	½	1¼
8	4.80	18	½, ⅝, ¾	1½
10	6.10	16	⅝, ¾	1¾

One in a box.

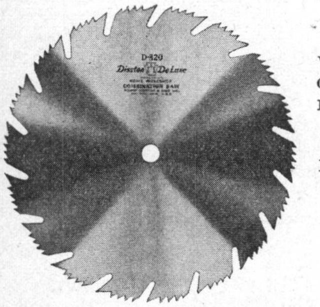


No. D-110—Rip

Used for cutting with the grain.

Diam., in.	Each	Thickness, ga.	Hole, in.	Wt. each, lbs.
6	$3.60	18	½	1
7	4.20	18	½	1¼
8	4.80	18	½, ⅝, ¾	1½
10	6.10	16	⅝, ¾	1¾

One in a box.



Combination

Used for cutting across grain or with the grain, or for cutting at other angles to the grain as in mitering.

No. D-320—Flat Ground

Diam., in.	Each	Thickness, ga.	Hole, in.	Wt. each, lbs.
6	$3.60	18	½	1
7	4.20	18	½	1¼
8	4.80	18	½, ⅝, ¾	1½
10	6.10	16	⅝, ¾	1¾

One in a box.

No. D-3200—Hollow Ground

Diam., in.	Each	Thickness, ga.	Hole, in.	Wt. each, lbs.
6	$5.30	16/19/16	½	1
7	6.50	16/19/16	½	1¼
8	7.40	14/17/14	½, ⅝, ¾	1½
10	9.40	14/17/14	⅝, ¾	1¾

One in a box.

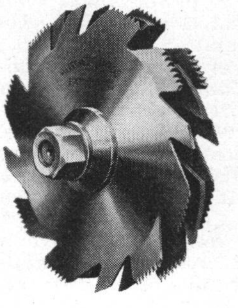
Bushings For Workshop Saws

Size, in.	⅝x½	¾x⅝	1x¾	1x⅝	1x½
Each	$.....	.....	.....	.....	.....

Open stock.

GROOVERS OR DADO HEADS

HUTHER PATENT



Can be used on any circular saw arbor for cutting any width groove from ⅛ to 4 inches.

This groover consists of two outside saws, each of which is a groover in itself, and as many inside cutters as required.

The inside cutters are made 1/16, ⅛ and ¼ inch thick, so that any width groove measurable in sixteenths may be cut. The outside cutters are made ⅛ inch thick.

This groover will cut a perfect groove, either with or across the grain, and will not leave a rough edge.

The outside cutters can be used singly, together, or in connection with as many or as few inside cutters as required to cut the necessary width groove. Cutters are jointed and filed ready for use.

Extra inside cutters can be furnished promptly.

Groovers are arranged in sets as follows:

Set Nos.	Cuts grooves	Set Nos.	Cuts grooves
1	⅛ to ⅜ by ⅛ in.	5	⅛ to 1½ by 1/16 in.
2	⅛ to ⅝ by ⅛ in.	6	⅛ to 2 by 1/16 in.
3	⅛ to ¾ by 1/16 in.	7	⅛ to 3 in. wide
4	⅛ to 1 by 1/16 in.	8	⅛ to 4 in. wide

	No. 1 Set		No. 2 Set		No. 3 Set		No. 4 Set	
Diam., in.	Per set	Wt. set, lbs.	Per set	Wt. set, lbs.	Per set	Wt. set, lbs.	Per set	Wt. set, lbs.
6	$14.85	1⅞	$17.89	2⅜	$21.46	2¾	$24.42	3½
7	16.99	2 7/16	20.21	3 3/16	24.10	3½	27.32	4¼
8	19.20	3¼	22.62	4¼	26.94	5	30.36	6
9	21.32	4	25.00	5¼	29.73	6	33.41	7½
10	24.53	5	28.42	6½	33.58	7¼	37.47	8½
11	27.99	5⅞	32.10	7⅝	37.67	9	41.82	10½
12	32.51	7⅝	37.03	9⅝	43.09	10¾	47.62	12¾

	No. 5 Set		No. 6 Set		No. 7 Set		No. 8 Set	
Diam., in.	Per set	Wt. set, lbs.	Per set	Wt. set, lbs.	Per set	Wt. set, lbs.	Per set	Wt. set, lbs.
6	$30.51	4¼	$36.51	5¼	$48.60	7¼	$60.61	9¼
7	33.79	6	40.25	7½	53.19	10½	66.12	13½
8	37.29	8¼	44.14	10	57.97	14	71.75	18
9	40.72	9¾	48.02	11¾	62.70	16½	77.34	21¼
10	45.24	11¼	52.98	14	68.50	19½	84.01	25
11	49.94	14	58.17	17½	74.50	24½	90.92	31½
12	56.67	17	65.71	21	83.81	29	101.91	37

In ordering please state the number of set, diameter of groover and size of hole wanted.

Open stock.

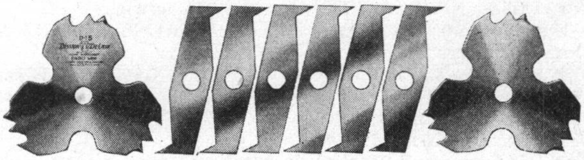
DISSTON, HOME WORKSHOP

Made of special steel. Specially designed for home workshop machines.

Consists of 2 outside cutters, ⅛ in. kerf, and 4 inside cutters, one 1/16, two ⅛ in. and one ¼ in. kerf. ½, ⅝ or ¾ in. center hole (specify). Cuts grooves ⅛ to 13/16 in. by sixteenths above ¼ in.

	Per set
No. D-16—6 in. diam., 13/16 in. kerf; wt. per set 3 lbs.	$22.80

One set in a box.



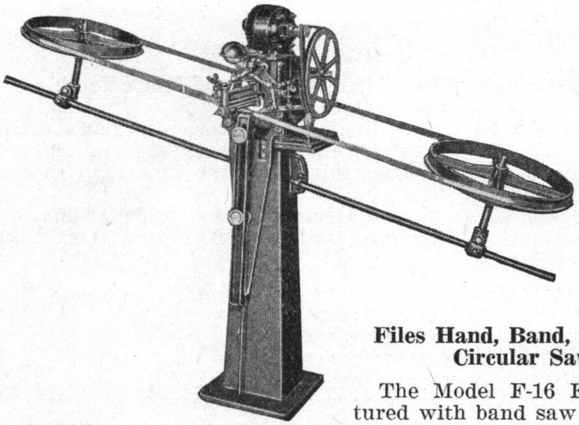
Consists of two outside cutters, 3/32 in. kerf, and 6 inside cutters, 1/16 in. kerf. Cuts grooves 3/32 to ⅝ in. by sixteenths above 3/16 in. ½, ⅝ or ¾ in. center hole, (specify).

	Per set
No. D-15—5½ in. diam.; wt. per set 1½ lbs.	$12.50

One set in a box.

AUTOMATIC SAW FILERS

FOLEY POWER DRIVEN



Files Hand, Band, Meat and Circular Saws

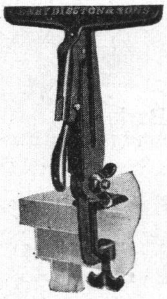
The Model F-16 Filer is pictured with band saw wheels and rods and pedestal mounting. It can also be furnished less wheels and rods and arranged for bench mounting.

	Each
Model F-16—Saw filer only	$222.00
Pedestal	40.00
Bandsaw Wheels and Rods	30.00
Complete—Shipping wt. 367 lbs.	$292.00

One in a box.

SAW CLAMPS

DISSTON



Malleable Iron, Black Lacquer Finish

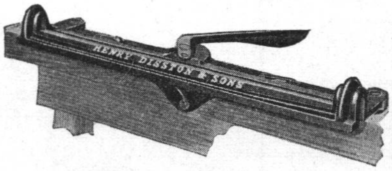
Lever operated; attached to bench with thumb screw. Clamp can be moved forward and backward to any angle desired by the user and clamped in position by a thumb screw. Side ratchet arrangement of the joint prevents slipping.

	Each
No. 2—9½ in. jaws; wt. each 9½ lbs.	$8.65

One in a box.

SAW CLAMPS

DISSTON



Malleable Iron, Black Lacquer Finish

For filing hand saws. A three-point pressure device gives an even, firm grip on the saw blade the full length of the jaw.

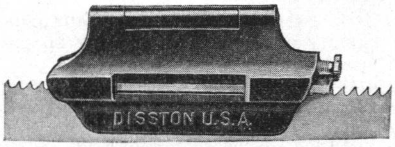
Shaped to screw on edge of bench.

	Each
No. 5—13 in. jaws, 14¾ in. long over all; wt. each 4 lbs.	$6.45

One in a box.

SAW JOINTERS

DISSTON


DISSTON U.S.A.

Malleable Iron, Black Lacquer Finish

For dressing teeth to uniform height before sharpening saw.

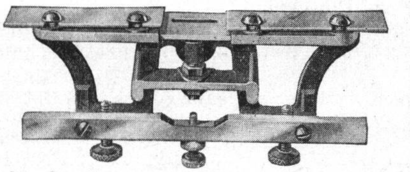
Fitted with a file of correct cut to joint a saw. File can be replaced readily.

	Per dozen
No. 10—2¼x10 in.; wt. per dozen 10¾ lbs.	$30.00

One-quarter dozen in a box.

SAW TOOLS

DISSTON IMPERIAL



For Refitting One and Two Man Cross Cut Saws

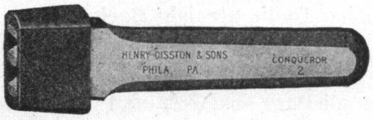
Cast iron frame; high grade tool steel plates that rest and slide on the cutting teeth of the saw. Hardened steel raker gauge filing plate. Adjustable by the turn of knurled screws. Malleable iron setting block, complete with setting block jointer, raker tooth gauge, set gauge, combination wrench and screw driver.

	Per dozen sets
No. 10—Set, 7¼ in. long, ¾ in. square, 1⅜ in. head, 3⅜x2 in. cast iron gauge; wt. per dozen sets 18 lbs.	$52.80

One set in a box with instructions for using.

SAW SWAGES

DISSTON CONQUEROR



Natural Finished Forged Steel Body

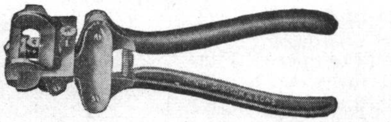
Hardened face, polished edges, hardened crucible steel jaws, blued steel band. Two dies are cut in the head of the swage, one die having convex facing, and the other having flat faces. Bottoms of the dies are slotted, protecting the cutting edge of the tooth.

	Each
No. 0—6 in. long, for circular saws 5 to 9 gauge; wt. each 23 oz.	$17.80
No. 1—5 in. long, for circular saws 6 to 9 gauge; wt. each 19 oz.	17.15
No. 2—3¾ in. long, for small circular and mill saws not heavier than 10 gauge; wt. each 8 oz.	15.75
No. 3—2 3/16 in. long, for small circular and band saws not heavier than 15 gauge; wt. each 3 oz.	15.30

One in a box.

SAW SETS

DISSTON TRIUMPH



Malleable Iron Polished Head and Black Handle

Hardened steel plunger and anvil.

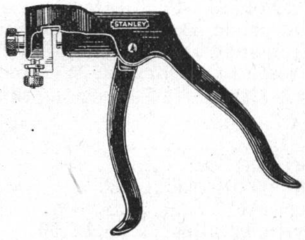
A strong tool, powerful in action, easily operated. Can be adjusted to any set required.

	Per dozen
No. 8—Large, 11 in. long, for circular and cross-cut saws, 12 gauge and lighter; wt. per doz. 25 lbs.	$66.00
No. 18—Medium, 9 in. long, for circular and cross-cut saws, 14 gauge and lighter; wt. per dozen 6 lbs.	52.80
No. 28—Small, 7¼ in. long, for hand, back, web and narrow band saws, 10 points to the in. and coarser; wt. per doz. 10 lbs.	44.00

Nos. 8 and 18, one; No. 28, one-half dozen in a box.

SAW SETS

STANLEY PISTOL GRIP



New Clamping Feature

A bushing advances and holds the saw blade firmly before the plunger touches the tooth. The saw blade can't slip. Teeth always in plain view. Graduated anvil, and adjustment readily duplicated.

Tool steel plunger and anvil, hardened and tempered, machined parts, black finish.

For Back, Panel and Small Circular Saws

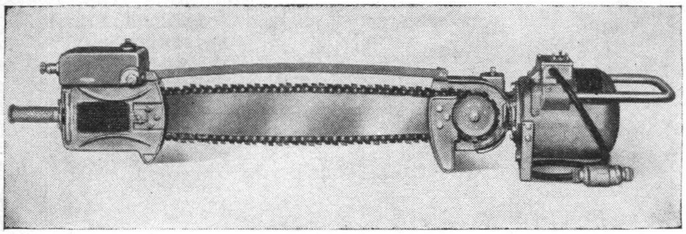
For 18 gauge and thinner having 14 points or less to the inch.

	Each
No. 42—4¾ in. high, 5¾ in. long; wt. each 1 lb.	$3.50

One in a box.

CHAIN SAWS

"TIMBERHOG" MOTOR DRIVEN



For 115 Volts AC or DC

An endless chain saw powered by a 1½ HP universal motor, ideally suited for light timber bucking, railroad, mine or plant maintenance.

Because of its light weight it is easily transportable thus conserving time if it is put to a variety of uses such as may be encountered during construction operations.

Oil feed to chain is accomplished by pressure system insuring proper lubrication at all times. Proper chain tension is controlled by device incorporated in the tailstock.

New chain design simplifies filing while maintenance cost is reduced to a minimum.

Features

1—Easy chain removal.
2—Chain tensioning device.
3—Special non-clogging sprocket.
4—Both gravity and force feed of oil to chain and guide bar.
5—Oil control for horizontal cutting.
6—Complete accessibility to all moving parts.

Standard Equipment

Saw guard, guide bar, chain, setting attachment, anvil and gauge, spare teeth, connecting links, rivets and tools including pin punch, chisel and wrenches.

Each

"Timberhog"—Complete, capacity 24 in.; wt. each 65 lbs. . . $275.00

One in a box.

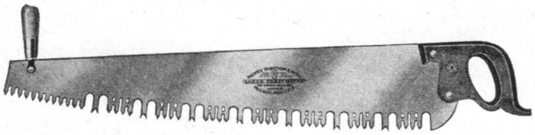
Each

Extra Chain $23.30

Note—Above saw also available air motor driven and gasoline engine driven.

CROSS CUT SAWS

DISSTON ONE-MAN



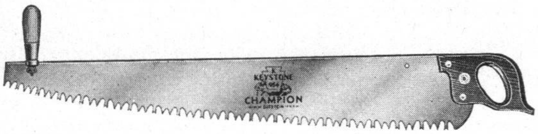
No. 514—Perforated Lance Tooth, Straight Back

Finest grade, excellent for heavy cutting.

Disston steel blade, taper ground, hardened and tempered. Four cutting teeth to each raker. Weatherproof finish hardwood handle, large grip for gloved hand, 3 brass screws, with supplementary handle.

Length, ft.	3	3½	4	4½
Width at butt, in.	6⅛	6¼	6½	6¾
Width at point, in.	2⅛	2¼	2⅜	2½
Wt. each, lbs.	3¼	3¾	5¼	6¼
Each, with handles	$8.30	9.20	10.70	12.15

Open stock.



No. 554—Champion Tooth

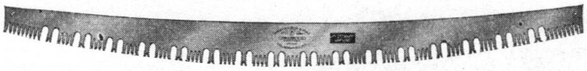
Disston steel blade, taper ground, hardened and tempered. Two cutting teeth to each raker. Weatherproof finish hardwood handle, 3 brass screws, with supplementary handle.

Length, ft.	3	3½	4	4½
Width at butt, in.	6	6¼	6½	6¾
Width at point, in.	2⅛	2¼	2⅜	2½
Wt. each, lbs.	3¼	3¾	5½	6¾
Each, with handles	$7.55	8.70	9.40	10.65

Open stock.

CROSS CUT SAWS

DISSTON



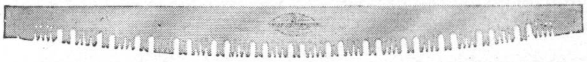
No. 712—"Timber Chief," Precision Ground Lance Tooth

Medium wide sway-back pattern.

Disston alloy steel, strong, tough and of proper resilience, high temper—cutting points stay sharp and teeth retain their set longer; precision ground perfectly true, thinner on the back than on the tooth edge.

Made especially for pine and small timber; wide gullets, no binding, choking or dragging; full curved breast. For both felling and bucking.

Length, ft.	5½	6
Width at center, in.	5½	5¾
Width at ends, in.	3⅜	3⅜
No. gauges of taper	5	4
Wt. each, lbs.	4⅝	5⅝
Each, without handles	$12.20	14.45

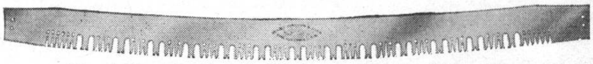


No. 115—Perforated Lance Tooth, Straight Back

Fine quality Disston steel; "tru-curve" taper ground; carefully tempered, four cutting teeth to one raker; five gauges thinner on back than on tooth edge.

For felling and bucking of hard and soft medium size timber.

Length, ft.	5	5½	6
Width at center, in.	5½	5⅞	6
Width at ends, in.	2⅞	3	3
Wt. each, lbs.	5¾	6¼	6¾
Each, without handles	$9.30	10.35	11.10

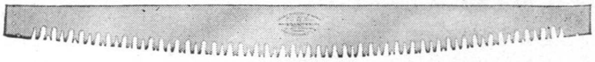


No. 143—Perforated Lance Tooth, Sway-Back

Fine grade Disston steel; "tru-curve" taper ground; scientifically hardened and tempered; four cutting teeth to one raker, three gauges thinner on back.

Especially designed for felling and bucking of small timber; popular with pulpwood contractors.

Length, ft.	5	5½	6
Width at center, in.	4⅜	4⅝	4⅞
Width at ends, in.	3⅜	3⅜	3⅜
Wt. each, lbs.	4	4½	5
Each, without handles	$9.30	10.35	11.10

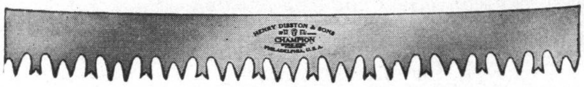


No. 152—Champion Tooth, Straight Back

Disston steel; "tru-curve" taper ground; hardened and tempered; two cutting teeth to one raker; two gauges thinner on back than on cutting edge.

For bucking and felling medium size soft and hard timber. A popular priced saw for general use.

Length, ft.	5	5½	6
Width at center, in.	5⅜	5¾	6⅛
Width at ends, in.	3¼	3¼	3¼
Wt. each, lbs.	5½	5¾	7
Each, without handles	$7.20	7.70	8.45



No. 254—Narrow Champion Tooth, Hollow Back

Disston steel; "tru-curve" taper ground; hardened and tempered; two cutting teeth to one raker.

For use where a light pattern saw is needed for ordinary and occasional work.

Length, ft.	5	5½	6
Width at center, in.	3¼	3¼	3¼
Width at ends, in.	3¼	3¼	3¼
Wt. each, lbs.	3½	4	4¼
Each, without handles	$4.80	5.15	5.55

All above, open stock.

Note—See page 309 for cross cut saw handles.

MINE SAWS

DISSTON ONE-MAN UTILITY SPEED SAW

No. 17—Straight Back

Disston steel blade with specially designed fast cutting teeth. Taper ground 2 gauges from tooth edge to back. Parkerized finish malleable iron handle with comfortable grip; two stainless steel rivets.

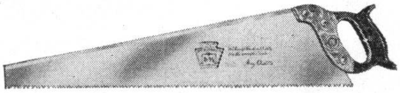
For heavy timber in mines, construction work, railroads, etc. 6½ in. wide at butt; 2½ in. wide at point.

Length, ft.	2½	3
Wt. each, lbs.	3	3¾
Each	$6.30	7.15

Two in a box.

HAND SAWS

DISSTON



No. D95—Lightweight, Straight Back

The "masterpiece," the finest saw Disston ever made. Streamlined for beauty, action and service.

Finest Disston steel blade, thin back, perfectly ground, tooth edge same gauge throughout, blade tapers evenly from butt to point and tooth edge to back. Highly polished Disstonite handle of tough, strong molded material; blade fits snugly into recess of handle and over four hollow-molded dowels; shield over dowels is attached with four chromium plated screws, lock washers and nuts.

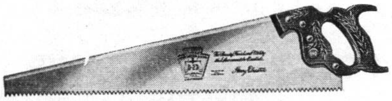
6 in. wide at butt, 1½ in. wide at point.

	Cross Cut	**Rip**
Length, in.	26	26
Points to inch	8–10–11	5½
Wt. dozen, lbs.	30	30
Per dozen	$117.00	117.00

One in a display box.

HAND SAWS

DISSTON



No. D23—Lightweight, Straight Back

The largest selling lightweight straight back saw.

Disston steel blade, hardened and tempered, highly polished striped back; true-taper ground, tapering evenly from butt to point and from tooth edge to back; thin back; weatherproof finish, carved hardwood handle, large hand hole, five nickel plated screws.

6½ in. wide at butt, 1½ in. wide at point.

	Cross Cut	**Rip**
Length, in.	26	26
Points to in.	8–10–11	5½
Wt. dozen, lbs.	22	22
Per dozen	$77.40	77.40

One-third dozen in a box.

No. D8—Medium Weight, Skew Back

The original, best known and largest selling skew back saw. The saw most carpenters use.

Disston steel blade, hardened and tempered, highly polished; striped back, true-taper ground, thin back; tooth edge is same gauge throughout. Cover top hardwood handle has weatherproof finish. Five nickel plated screws on 26 in., four nickel plated screws on 20 in.

	Panel	**Cross Cut**
Length, in.	20	26
Points to in.	10–11	8–10–11
Wt. dozen, lbs.	14¾	22¾
Per dozen	$65.40	71.40

	Rip
Length, in.	26
Points to in.	5½
Wt. dozen, lbs.	22¾
Per dozen	$71.40

One-third dozen in a box.

HAND SAWS

DISSTON

No. D7—Lightweight, Straight Back

A high quality, but not as well finished as the D23 saw. Disston steel blade, hardened and tempered, polished; thin striped back; true-taper ground, blade evenly ground from butt to point and from tooth edge to back, making a smooth easy-cutting saw. Tooth edge is same gauge throughout. Weatherproof finish, comfortable grip cover top hardwood handle, four nickel plated screws.

6⅝ in. wide at butt; 1½ in. wide at point.

	Cross Cut
Length, in.	26
Points to in.	8, 10, 11
Wt. dozen, lbs.	22
Per dozen	$65.40

One-third dozen in a box.

FLOORING SAWS

DISSTON

For General Repair Work

For cutting out sections of floors, partitions or ceilings without boring holes, chiseling, etc. Sections cut out with this saw can be replaced in original position if desired.

Disston steel blade, 9 points to the inch; toothed on rounded point and halfway back to cut on push or draw stroke.

Carved reversible cherry handle, weatherproofed natural finish; adjustable to various positions. Nickel plated bolt and wing nut.

Per dozen

No. D19—18 in. long, 4 in. wide at butt; wt. per dozen 12¾ lbs. . .**$66.00**

One-third dozen in a box.

PLUMBERS' SAWS

DISSTON

Reversible Adjustable Handle

Disston steel blade, taper ground and specially tempered to cut nails, soil pipe, gas pipe, etc.; 12 points to the inch.

Reversible and adjustable carved cherry handle, weatherproof natural finish. Nickel plated bolt and wing nut.

Per dozen

No. 10—18 in. blade, 3½ in. wide at butt, 1¾ in. wide at point; wt. per dozen 11 lbs. **$60.60**

One-third dozen in a box.

BACK SAWS

DISSTON

Bright Extra Heavy Stiff Steel Back

Disston steel blade, hardened and tempered; bevel filed teeth for cutting across or diagonally to the grain. Blade and back extend well into the handle to insure better control.

Beechwood handle, weatherproofed natural finish; comfortable grip; three brass screws.

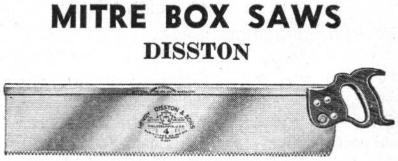
Per dozen

No. 4—12 in. blade, 3 in. wide under back, 13 points to inch; wt. per dozen 18¾ lbs. **$59.40**

One-third dozen in a box.

MITRE BOX SAWS

DISSTON



No. 4—Heavy Stiff Steel Back

Disston steel blade, polished steel back, 11 points to the inch. Beechwood handle, weatherproofed natural finish; brass screws.

Length, in.	26	28	30
Width under back, in.	4	5	6
No. of screws	3	4	4
Wt. dozen, lbs.	50	54	60
Per dozen	$159.60	171.60	192.00

One in a box.

KEYHOLE SAWS

DISSTON

For Close Inside Work

For cutting keyholes, frets, etc.

Disston steel blade, thin back, tapered to a sharp point; 10 points to the inch. Weatherproofed natural finish, comfortable grip; two brass screws.

Per dozen

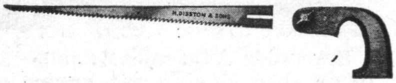
No. 15—12 in. blade; wt. per dozen 3¾ lbs. **$17.00**

Extra Blade—12 in. long **9.50**

One-half dozen in a box.

COMPASS SAWS

DISSTON



Interchangeable Pattern

Disston steel blade, polished, hardened and tempered; taper ground, thin back; special shaped teeth, 10 points to inch. Weatherproofed natural finish square-top hardwood handle with comfortable open grip. Nickel plated bolt and wing nut.

Square top handle permits blades to be used in regular or reversed position in close quarters.

Per dozen

No. 4—12 in. blade; wt. per dozen 6 lbs. **$24.00**

One-quarter dozen in a box.

Extra Blades

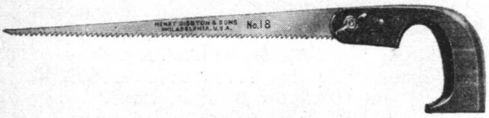
Per dozen

No. 4B—12 in. long; wt. per dozen 1½ lbs. **$10.50**

One dozen in a box.

COMPASS NAIL SAWS

DISSTON



Tempered for Cutting Nails

For rough heavy work.

Special steel blade, taper ground; 11 points to the inch. Butt of blade slotted. Saw can be used with blade in either regular or reverse position. Square top hardwood handle with comfortable open grip; weatherproofed natural finish. Nickel plated bolt and wing nut.

Per dozen

No. 18—14 in. blade; wt. per dozen 7 lbs. **$27.75**

Extra Blades

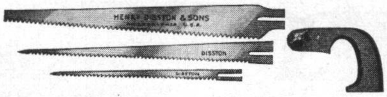
Per dozen

No. 18B—14 in. long; wt. per dozen 1¾ lbs. **$12.95**

Open stock.

NESTS OF SAWS

DISSTON



Interchangeable Blades

Disston steel blades, hardened, tempered and taper ground. Square top hardwood handle, weatherproofed natural finish; nickel plated bolt and wing nut; may be reversed quickly.

With 16 in. Pruning Blade

Per dozen nests

No. 3 Nest—Includes 10 in. keyhole blade, 14 in. compass blade, 16 in. pruning blade, and handle; wt. per dozen nests 10 lbs. ...**$48.00**

Extra Blades for No. 3 Nest

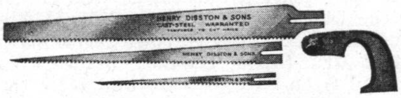
Per dozen

No. 3P Pruning Blades—16 in.; wt. dozen 3 lbs. **$16.20**

No. 3C Compass Blades—14 in.; wt. dozen 2 lbs. **11.50**

No. 3K Keyhole Blades—10 in.; wt. dozen 1 lb. **8.40**

Open stock.



Interchangeable Blades

Disston steel blades, hardened and tempered and specially toothed for their particular work. Square top hardwood handle, weatherproofed natural finish. Nickel plated bolt and wing nut.

With 18 in. Plumbers' Blade

Specially tempered to cut lead pipe and nails embedded in wood.

Per dozen nests

No. 60 Nest—Includes 10 in. keyhole blade, 14 in. compass blade, 18 in. plumbers' blade, and handle; wt. per dozen nests 11 lbs. **$54.00**

One-quarter dozen nests in a box.

Extra Blades for No. 60 Nest

Per dozen

No. 60K Keyhole Blades—10 in.; wt. dozen 1 lb. ....**$ 8.40**

No. 60C Compass Blades—14 in.; wt. dozen 2 lbs. **11.50**

No. 60P Plumbers' Blades—18 in.; wt. dozen 4 lbs. **16.30**

Open stock.

COPING SAW BLADES

DISSTON

Pin Ends

Bright, spring steel blade, hardened and tempered; teeth filed and set. Seventeen points to the inch.

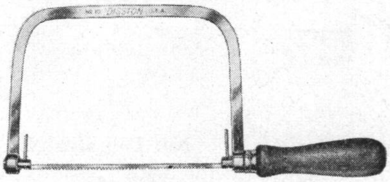
Per gross

No. 10B—6⅝ in. long; $6\frac{7}{16}$ in. long between pins; ⅛ in. wide; wt. per gross 10 oz. **$3.55**

One dozen in an envelope, one gross in a box.

COPING SAWS

DISSTON



Adjustable to Any Angle

Pins on each end of stretchers for turning blade to desired angle, facing blade up, down or sideways.

Rigid, round edge steel frame ⅜ in. wide and $\frac{5}{32}$ in. thick; nickel plated throughout. Large, mahogany finished hardwood handle.

Blade is easily adjusted to any tension by a long threaded steel stud and solid bushing in handle.

Per dozen

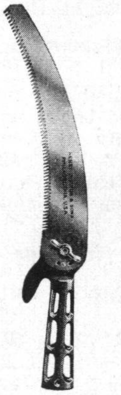
No. 10—6⅝ in. long, frame 4¾ in. deep; with one blade; wt. per dozen 7½ lbs. **$9.00**

One-half dozen in a box.

POLE PRUNING SAWS

DISSTON

With Hood on Socket



For pulling branches out of trees.

Curved blade, taper ground. Long, slender, needle shaped teeth cut easily and clean; 8 points to the inch. Cuts on draw stroke. Malleable iron socket, aluminum finish, 1¼ in. wide diameter.

Blade attached to socket by wing nut, adjustable to any angle.

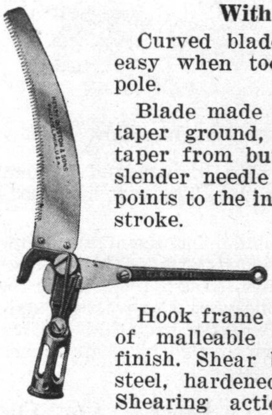
Per dozen

No. 114—15 in. cutting edge; wt. per dozen 12 lbs. **$48.00**

Extra Blades **33.25**

One-sixth dozen in a box.

With Shear



Curved blade makes sawing easy when tool is used with pole.

Blade made of Disston steel, taper ground, with a curving taper from butt to point. Has slender needle shaped teeth, 8 points to the inch. Cuts on draw stroke.

Hook frame and socket made of malleable iron, aluminum finish. Shear blade is Disston steel, hardened and tempered. Shearing action of blades makes a smoother, easier cut.

Hook will take a ¾ in. limb. Shear blade is 4 in. long with 1½ in. cutting edge. Inside diameter socket 1¼ in. Strong spring returns shear to open position.

Per dozen

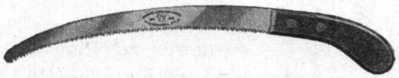
No. 55—15 in. length tooth edge, 4 in. length shear blade; wt. per dozen 25 lbs. **$75.60**

Extra Blades **33.25**

One-sixth dozen in a box.

PRUNING SAWS

DISSTON



Crescent Shaped Blade

Disston steel blade, 7 points, reversed teeth to cut on draw stroke. Weatherproofed natural finish hardwood handle, comfortable grip; two brass screws.

The most popular saw of its type made.

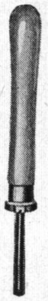
Per dozen

No. 166—14 in. long; 1½ in. wide at butt; wt. per dozen 6 lbs. ..$28.80

One-half dozen in a box.

CROSS CUT SAW HANDLES

DISSTON



Loop Pattern

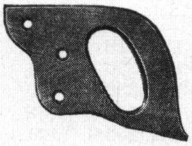
Hardwood handle; malleable iron washer and ferrule, steel loop rod and inside nut.

Per pair

No. 108—8 5/16 in. long above blade; 1 5/16 in. diameter; wt. per pair 1¼ lbs. $1.20

Ten pairs in a carton.

DISSTON ONE-MAN



Lacquered Finish

Seasoned wood, slit and bored for 3 screws.

Per dozen

No. 418—Wt. per dozen 7 lbs. .$15.35

Weatherproofed Natural Finish

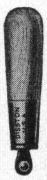
Seasoned hardwood, slit and bored for three screws, one a medallion. Large hand hole, comfortable grip.

Per dozen

No. 218—Wt. per dozen 7 lbs. $17.65

One-half dozen in a box.

DISSTON SUPPLEMENTARY



For One-Man Saws

Seasoned hardwood; strong steel ferrule and washer. Slotted steel rod prevents slipping sideways rivet upset.

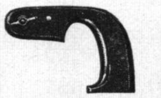
Per dozen

No. 118—4¾ in. long, 1 5/16 in. diam.; wt. per dozen 4 lbs. $7.45

One dozen in a box.

COMPASS SAW HANDLES

DISSTON



Weatherproofed Natural Finish

Hardwood; nickel plated bolt and wing nut.

Used on Nos. 8 and 18 compass saws and Nos. 3 and 60 nests of saws.

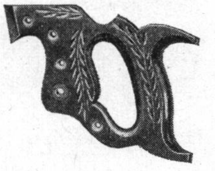
Per dozen

No. 4—Wt. per dozen 4¼ lbs. $10.20

HAND SAW HANDLES

DISSTON

Accurately bored to fit holes so handles may be replaced easily.

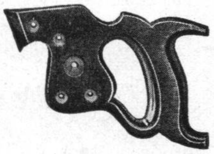


For No. D23 Saws

Hardwood weatherproof natural finish, full carved, slit and bored.

Per dozen

No. D23—For 26 in. saws; wt. doz. 6 lbs. $23.40



For No. D8 Saws

Hardwood, weatherproof finish; slit and bored.

Per dozen

No. D8—For 26 in. saws; wt. dozen 6 lbs. $21.00

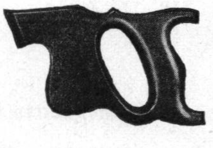
No. D8—For 20 in. saws; wt. doz. 5½ lbs. 21.00

For No. D7 Saws

Hardwood; weatherproofed natural finish; slit and bored.

Per dozen

No. D7—For 26 in. saws; wt. doz. 6 lbs. $16.35



Not Bored

Hardwood. weatherproof finish; slit.

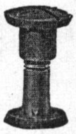
Per dozen

No. 66—For 26 in. saws; wt. dozen 6¾ lbs. $12.65

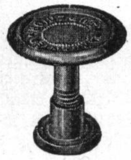
All above, one dozen in a box.

SAW SCREWS

Wrought Brass, Polished



Nos. 1 and 2



Nos. 3 and 4

No. 1 for panel, compass, back and butcher saws, No. 2 for hand and rip saws, Nos. 3 and 4 for hand, rip and compass saws.

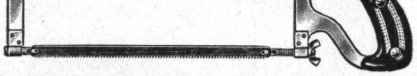
Nos. 1 and 2 are plain head; Nos. 3 and 4 medallion head.

Nos.	1	2	3	4
Diam. head, in. ..	½	9/16	13/16	1
Wt. dozen, oz. ..	4	4	6	8
Per dozen	$0.75	.85	1.15	1.35

One dozen in a box.

HACK SAW FRAMES

MILLERS FALLS


MILLERS FALLS COMPANY, GREENFIELD MASS.
No. 48

Checked Composition Pistol Grip Handle

Polished and nickel plated steel frame, checked composition pistol grip handle, blade may be faced in four directions.

Unusually rigid and finely balanced. Complete with 10 in. blade.

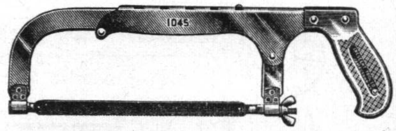
Each

No. 48—Adjustable for 8 to 12 in. blades; depth under back 3¼ in., stock 3/16x11/16 in.; wt. each 1¾ lbs. $2.80

One in a box.

HACK SAW FRAMES

CRESCENT



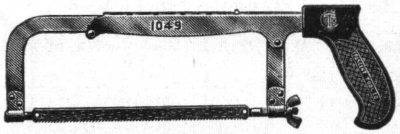
Extra Heavy Duty

Nickel plated steel frame, extra heavy construction, absolutely rigid under all conditions; heavy checkered steel handle.

This saw will stand the roughest and hardest kind of treatment. Thumb screw adjustment. Blade can be faced in four directions. Complete with blade.

Each

No. 1045—Adjustable for 8 to 12 in. blades, depth under back 3¼ in.; size stock 3/16x7/8 in.; wt. each 2 3/16 lbs. $2.50



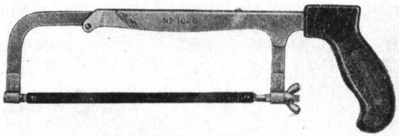
Heavy Duty; Pistol Grip Handle

Nickel plated heavy gauge steel frame; extra deep cut; brown composition pistol grip handle, burl walnut finish. Frame extends all the way through handle. Thumb screw adjustment. Blade can be faced in four directions. Complete with blade.

The new type synthetic handle is impervious to oils or acids, will stand any extreme of temperature.

Each

No. 1049—Adjustable for 8 to 12 in. blades; depth under back 3¼ in., size stock 3/16x11/16 in.; wt. each 1 7/8 lbs. $2.40

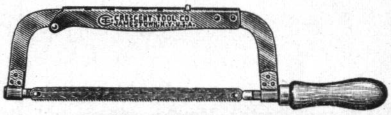


Pistol Grip Handle

Nickel plated steel frame, brown composition pistol grip handle, burl walnut finish. Frame extends all the way through handle. Thumb screw adjustment. Blade can be faced in four directions. Complete with blade.

Each

No. 1048—Adjustable for 8 to 12 in. blades; depth under back 2½ in., size stock .164x9/16 in.; wt. each 1 3/16 lbs. $1.75


CRESCENT TOOL CO.

Straight Handle

Nickel plated frame, natural finish hard maple handle. Blade can be faced in four directions. Handle adjustment. Complete with blade.

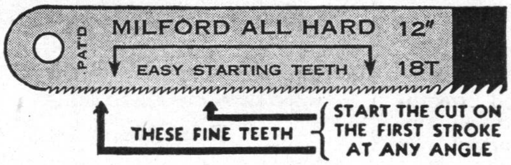
Each

No. 1042—Adjustable for 8 to 12 in. blades; depth under back 2½ in., stock 3/16x11/16 in.; wt. each 1⅛ lbs. $1.40

All above, one in a box.

HACK SAW BLADES

MILFORD DUPLEX STANDARD STEEL



The blade takes hold at once. No sticking on corners. Cut can be spotted exactly where it is wanted, and the easy starting teeth help guide the blade for straight clean cutting. The user gets a fine, full sweep right from the point on every cut.

Flexible Standard Steel (Green Label), For Hand Frames

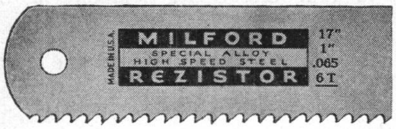
Lgth., in.	Per 100	Wdt., in.	Thick., in.	No. of blade, teeth per inch 14	18	24	Std. 32	Wt. 100, lbs.
10	$13.00	½	.025	....	FD1018	FD1024	F1032	3¼
12	16.00	½	.025	FD1214	FD1218	FD1224	F1232	4

All Hard Standard Steel (Yellow Label), For Hand Frames

Lgth., in.	Per 100	Wdt., in.	Thick., in.	No. of blade, teeth per inch 14	18	24	Std. 32	Wt. 100, lbs.
10	$13.00	½	.025	....	MD1018	MD1024	M1032	3¼
12	16.00	½	.025	MD1214	MD1218	MD1224	M1232	4

100 in a box.

MILFORD ALL-HARD REZISTOR, SPECIAL ALLOY HIGH SPEED STEEL



Rezistor blades have an excellent balance of hardness and toughness that enables them to easily cut stainless steels of all analyses, high speed and manganese steels, welded pipe and other materials that are destructive to other blades.

All Hard, For Hand Frames

Lgth., in.	Per 100	Wdt., in.	Thick., in.	No. of blade, teeth per inch 14	18	24	Std. 32	Wt. 100, lbs.
10	$32.00	½	.025	....	RD1018	RD1024	R1032	3½
12	38.40	½	.025	RD1214	RD1218	RD1224	R1232	4½

100 in a box.

All Hard, (Orange Label), For Power Machines

Lgth., in.	Each	Wdt., in.	Thick., in.	No. of blade, teeth per inch 4	6	10	14	18	Wt. 100, lbs.
12	$0.75	⅝	.032	.....	.....	.....	R2824	R2828	7
12	1.43	1	.049	.....	.....	.....	R1214	.....	17
12	1.66	1	.065	.....	.....	R1210	.....	.....	22
14	1.67	1	.049	.....	.....	R1490	R1414	.....	20
14	1.94	1	.065	.....	.....	R1410	.....	.....	25
14	2.42	1¼	.065	R1444	R1446	R1440	.....	.....	33
17	2.03	1	.049	.....	.....	.....	R1714	.....	24
17	2.35	1	.065	.....	.....	R1710	.....	.....	31
17	2.94	1¼	.065	R1744	R1746	R1740	.....	.....	39
18	2.49	1	.065	.....	.....	R1810	.....	.....	33
18	3.11	1¼	.065	R1844	R1846	R1840	.....	.....	42

10 in a box.

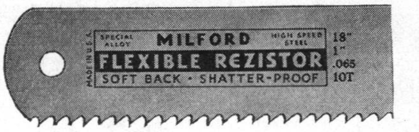
All Hard, Extra Heavy (Orange Label), For Power Machines

Lgth., in.	Each	Width, in.	Thick., in.	No. of blade, teeth per inch 4	6	Wt. 100, lbs.
14	$ 3.08	1½	.072	R1424	R1426	45
18	3.96	1½	.072	R1824	R1826	54
18	5.83	2	.085	R8254	R8256	90
21	6.80	2	.085	R2154	R2156	102
24	7.77	2	.085	R4254	R4256	121
24	8.63	2	.100	R4204	......	138
30	13.48	2½	.100	R3204	......	215

10 in a box.

HACK SAW BLADES

MILFORD FLEXIBLE REZISTOR, HIGH SPEED STEEL



Flexible Rezistor soft back blades in hand frame or power machine will deliver maximum cutting service on any material, at higher speed, without danger of breakage. Hand frame sizes have **Duplex Easy Starting Teeth.**

Flexible (Silver Label), For Hand Frames

Lgth., in.	Per 100	Wdt., in.	Thick., in.	No. of blade, teeth per inch 14	18	24	Std. 32	Wt. 100, lbs.
10	$51.00	½	.025	....	FR0618	FR0624	FR0632	3½
12	61.00	½	.025	FR2614	FR2618	FR2624	FR2632	4½

100 in a box.

Flexible (Silver Label), For Power Machines

Lgth., in.	Each	Width, in.	Thick., in.	No. of blade, teeth per inch 14	18	Wt. 100, lbs.
12	$0.75	⅝	.032	FR2824	FR2828	7

Lgth., in.	Each	Wdt., in.	Thick., in.	No. of blade, teeth per inch 4	6	10	14	Wt. 100, lbs.
12	$1.43	1	.049	....	....	....	FR1214	17
12	1.66	1	.065	....	....	FR1210	....	22
14	1.67	1	.049	....	....	FR1490	FR1444	20
14	1.94	1	.065	....	....	FR1410	....	25
14	2.42	1¼	.065	FR1444	FR1446	FR1440	....	33
17	2.03	1	.049	....	....	....	FR1714	24
17	2.35	1	.065	....	....	FR1710	....	31
17	2.94	1¼	.065	FR1744	FR1746	FR1740	....	39
18	2.49	1	.065	....	....	FR1810	....	33
18	3.11	1¼	.065	FR1844	FR1846	FR1840	....	42

10 in a box.

Flexible, Extra Heavy (Silver Label), For Power Machines

Lgth., in.	Each	Width, in.	Thick., in.	No. of blade, teeth per inch 4	6	Wt. 100, lbs.
14	$ 3.08	1½	.072	FR1424	FR1426	45
18	3.96	1½	.072	FR1824	FR1826	54
18	5.83	2	.085	FR8254	FR8256	90
21	6.80	2	.085	FR2154	FR2156	102
24	7.77	2	.085	FR4254	FR4256	121
24	8.63	2	.100	FR4204	....	138
30	13.48	2½	.100	FR3204	....	215

10 in a box.

HOW TO SELECT POWER SAW BLADES REZISTOR

High Speed Steel

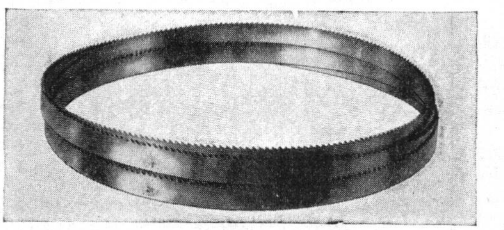
The chart below shows the number of teeth per inch, speed, and pressure recommended for cutting various common materials, using a cutting lubricant.

Material to be cut	Teeth per in.	Strokes per min.	Wt. or pressure, lbs.
Aluminum Alloy	4–6	150	60
Aluminum, Pure	4–6	150	60
Brass Castings, Soft	6–10	150	60
Brass Castings, Hard	6–10	135	60
Bronze Castings	6–10	135	125
Cast Iron	6–10	135	125
Copper, Drawn	6–10	135	125
Carbon Tool Steel	6–10	90	125
Cold Rolled Steel	4–6	135	150
Drill Rod	10	90	125
High Speed Steel	6–10	90	125
Machinery Steel	4–6	135	150
Manganese Bronze	6–10	90	60
Malleable Iron	6–10	90	125
Nickel Silver	6–10	60	150
Nickel Steel	6–10	90	150
Pipe, Iron	10–14	135	125
Slate	6–10	90	125
Structural Steel	6–10	135	125
Tubing, Brass	14	135	60
Tubing, Steel	14	135	60

All figures are based on the use of a cutting lubricant, except for iron castings.

BAND SAW BLADES

MILFORD FLEXIBLE BACK, METAL CUTTING



Milford is the world's largest producer of metal-cutting band saws, with many years experience making this difficult product. Milford Flexible Back band saw is made of finest tool steel of analysis and heat treatment perfected for metal-cutting saw.

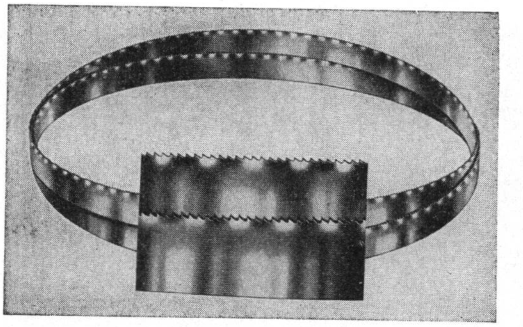
Sizes listed are made in one standard set only—Raker Set, except in 32 teeth which are Wavy Set; and in one standard temper only—Temper A. With the proper selection of width and teeth-per-inch, and blade speed, any metal, ferrous or non-ferrous, and any non-metallic material can be cut efficiently by this saw of standard set and temper.

Standard Specifications

Width, in.	Per foot	Welding, each	Thickness, in.	Teeth per inch
1/16	$0.18	$0.90	.025	24, 32
3/32	.18	.90	.025	18, 32
⅛	.18	.90	.025	14, 18, 24
3/16	.18	.90	.025	10, 14, 18, 24, 32
¼	.18	.90	.025	10, 12, 14, 18, 24, 32
⅜	.192	.90	.025	8, 10, 14, 18, 24
½	.204	.90	.025	6, 10, 14, 18, 24
⅝	.252	.90	.032	8, 10, 14, 18, 24
¾	.288	.90	.032	6, 8, 10, 12, 14, 18
1	.36	.90	.035	6, 8, 10, 14

BAND SAW BLADES

MILFORD "WAVY SET" FLEXIBLE BACK, METAL CUTTING



Recommended for cutting solids, angles, pipe, tubing on Wells, Kalamazoo, Johnson, Napier, and other types of horizontal band saw machines.

This unique set prevents teeth from ripping, removes the chips from the cutting area more freely resulting in **30% longer blade life,** faster cutting, and more straight cuts per blade.

The "Wavy Set" is also recommended for cutting non-ferrous metals, particularly hard brass and bronze on the vertical foundry type machine.

Standard Specifications

Width, in.	Per foot	Welding, each	Thickness, in.	Teeth per inch
¼	$0.204	$0.90	.025	10, 14
⅜	.252	.90	.032	10, 14
½	.288	.90	.032	10, 12, 14
¾	.36	.90	.035	8, 10

Cut to Length and Welded—Flexible Back and "Wavy Set" Blades—List Prices Each

Lengths, ft.	in.	Widths, in. ¼	⅜	½	⅝	¾	1
5	0	$1.80	$1.86	$1.92	$2.16	$2.34	$2.70
5	6	1.89	1.96	2.02	2.29	2.48	2.88
6	0	1.98	2.05	2.12	2.41	2.63	3.06
6	6	2.07	2.15	2.23	2.54	2.77	3.24
7	0	2.16	2.24	2.33	2.66	2.92	3.42
7	6	2.25	2.34	2.43	2.79	3.06	3.60
8	0	2.34	2.44	2.53	2.92	3.20	3.78
8	6	2.43	2.53	2.63	3.04	3.35	3.96
9	0	2.52	2.63	2.74	3.17	3.49	4.14
9	6	2.61	2.72	2.84	3.29	3.64	4.32
10	0	2.70	2.82	2.94	3.42	3.78	4.50
10	6	2.79	2.92	3.04	3.55	3.92	4.68
11	0	2.88	3.01	3.14	3.67	4.07	4.86
11	6	2.97	3.11	3.25	3.80	4.21	5.04
12	0	3.06	3.20	3.35	3.92	4.36	5.22
12	6	3.15	3.30	3.45	4.05	4.50	5.40
13	0	3.24	3.40	3.55	4.18	4.64	5.58
13	6	3.33	3.49	3.65	4.30	4.79	5.76

Lengths, ft.	in.	Widths, in. ¼	⅜	½	⅝	¾	1
14	0	$3.42	$3.59	$3.76	$4.43	$4.93	$5.94
14	6	3.51	3.68	3.86	4.55	5.08	6.12
15	0	3.60	3.78	3.96	4.68	5.22	6.30
15	6	3.69	3.88	4.06	4.81	5.36	6.48
16	0	3.78	3.97	4.16	4.93	5.51	6.66
16	6	3.87	4.07	4.27	5.06	5.65	6.84
17	0	3.96	4.16	4.37	5.18	5.80	7.02
17	6	4.05	4.26	4.47	5.31	5.94	7.20
18	0	4.14	4.36	4.57	5.44	6.08	7.38
18	6	4.23	4.45	4.67	5.56	6.23	7.56
19	0	4.32	4.55	4.78	5.69	6.37	7.74
19	6	4.41	4.64	4.88	5.81	6.52	7.92
20	0	4.50	4.74	4.98	5.94	6.66	8.10
20	6	4.59	4.84	5.08	6.07	6.80	8.28
21	0	4.68	4.93	5.18	6.19	6.95	8.46
21	6	4.77	5.03	5.29	6.32	7.09	8.64
22	0	4.86	5.12	5.39	6.44	7.24	8.82

Note—Saws a fraction over the foot in length figure as next half foot. Saws over the half foot in length figure as next full foot.

MILFORD
PROFILE SAW

MILFORD PROFILE, METAL CUTTING

For use on all contour sawing, jig and band saw machines for cutting of irregular shapes either internal or external in metal or plastics. Can be used on DoAll, Tannewitz, Grob, Theil, Oliver and other types of machines.

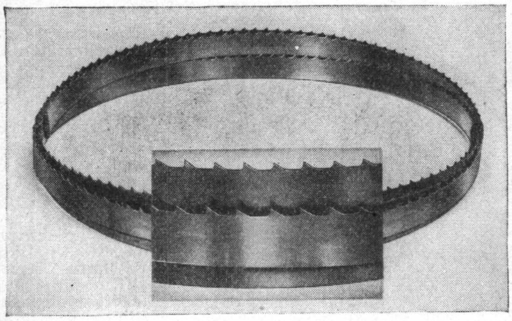
100 ft. coils, put up in unique dispenser box. No binding wires are used. Simply run out, measure and cut desired length. Done in a jiffy. Saves bands and guards coils against corrosion. All boxes plainly labeled.

List Prices and Stock Numbers; Temper A—Set-Raker—.042

Width, in.	Per 100 ft. coil	Thick., in.	Teeth Per Inch and Stock Numbers 6	8	10	12	14	18	24	Wavy Set Only 32	Wt. per 100 ft., oz.
1/16	$ 8.46	.025	.....	.....	.....	.....	.....	.....	A1624	A1632	1⅛
3/32	8.46	.025	.....	.....	.....	.....	.....	A3318	.....	A3332W	1½
⅛	8.46	.025	.....	.....	.....	.....	A1814	A1818	A1824	....	1 11/16
3/16	8.46	.025	.....	.....	A3110	.....	A3114	A3118	A3124	A3132W	2⅛
¼	8.46	.025	.....	.....	A1410	A1412	A1414	A1418	A1424	A1432W	2⅝
⅜	9.02	.025	.....	A3808	A3810	.....	A3814	A3818	A3824	....	3 11/16
½	9.59	.025	A1206	.....	A1210	.....	A1214	A1218	A1224	....	5
⅝	11.84	.032	.....	A5808	A5810	.....	A5814	A5818	A5824	....	7⅛
¾	13.54	.032	A3406	A3408	A3410	A3412	A3414	A3418	.....	....	8½
1	16.92	.035	A1006	A1008	A1010	.....	A1014	.....	.....	....	12½

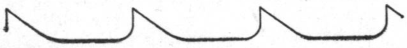
BAND SAW BLADES

MILFORD SKIP TOOTH FLEXIBLE BACK, METAL-PLASTIC-WOOD



The Skip Tooth design is used for cutting such non-ferrous metals as aluminum, magnesium, and soft brass and bronze. It is also used for cutting plastics and other non-metallic materials and wood. Being a hard-tooth flexible back saw, of the same hardness as the regular Milford metal cutting saw, it will outlast the softer spring tempered saws used for cutting wood or soft metals at high speed.

This saw cannot be reset when worn.



Width, in.	Per foot	Welding, each	Thickness, in.	Teeth per inch
¼	$0.18	$0.90	.025	4–6
⅜	.192	.90	.025	3–4
½	.204	.90	.025	3–4
¾	.288	.90	.032	3
1	.36	.90	.035	2–3

MILFORD WOOD CUTTING

Made of finest saw steel, teeth carefully shaped and set. May be resharpened and reset.

Wdt., in.	Thick., in.	Per ft.	Per weld	Ga.	Teeth per inch
3/16	.020	$0.21	$1.08	25	6
3/16	.028	.21	1.08	22	4–6
¼	.020	.21	1.08	25	6
¼	.028	.21	1.08	22	4–6
¼	.032	.21	1.08	21	4–5
⅜	.020	.23	1.08	25	5
⅜	.028	.23	1.08	22	4–5
⅜	.032	.23	1.08	21	4–5
½	.020	.24	1.08	25	5
½	.028	.24	1.08	22	2–3–4–5
½	.032	.24	1.08	21	4–5
⅝	.028	.26	1.08	22	4
⅝	.032	.26	1.08	21	3–4
¾	.028	.29	1.60	22	3–4
¾	.032	.29	1.60	21	2–3–4
¾	.035	.29	1.60	20	3
1	.028	.36	2.13	22	4
1	.032	.36	2.13	21	3–4
1	.035	.36	2.13	20	2–3–4
1¼	.035	.42	2.13	20	2–3
1½	.035	.52	3.20	20	2
1¾	.035	.62	3.20	20	2

STANDARD BAND SAW BLADES FOR VARIOUS MACHINES

Name of Machine	Length of blade, ft.	in.	Width of blade, in.
Armstrong-Blum	14	8	⅝ or ¾
Atkins No. 3	15	8	⅝ or ¾
Atkins No. 4	14	1	⅝ or ¾
Avey Milband	14	9	1
Boice Crane No. 800	7	6	3/16 to ½
Boice Crane No. 2300	8	2	3/16 to ¾
Clark Junior	10	10	½ to ⅝
Clark Compound	15	6	1
Clark Special	10	10	½ or ⅝
Crescent—B-20-M	11	3	¼ to ¾
Crescent—26 in. Wheel	13	9	¼ to 1
Crescent—32 in. Wheel	16	4	¼ to 1
Crescent—36 in. Wheel	18	6	¼ to 1
Delta No. 785 Machine—10 in. Wheel	5	6	⅛ to ⅜
Delta No. 768 Machine—10 in. Wheel	6	2	⅛ to ⅜
Delta 12 in. Wheel	6	6	⅛ to ⅜
Delta 14 in. Wheel	7	9½	⅛ to ¾
Delta 14 in. Wheel (HT. Attach.)	8	9	⅛ to ¾
Do-All No. J	7		3/32 to ½
Do-All No. JD	8	7	3/32 to ½
Do-All No. M	9		3/32 to ½
Do-All No. ML	10		3/32 to ½
Do-All No. V16	10		3/32 to ½
Do-All No. V26	14	9	3/32 to ½
Do-All No. V36	13	6	3/32 to ½
Duro 12½ in. Wheel	6	6	3/16 to ⅜
Duro 15 in. Wheel	7	11	⅛ to ½
Duro 16 in. Wheel	9	3	⅛ to ¾
Grob NS18	12		3/32 to 1
Grob NS24	14	4	3/32 to 1
Grob NS36	15		3/32 to 1
Grob S14	7	9	3/32 to ½
Grob (Open End Type) OS20-OSN	140		3/32 to ¼
Houghton	12	6	⅝ or ¾
Johnson (10x18 in.)	11	5	¾
Kalamazoo (8x16 in.)	10	5	¾
Kalamazoo (8x24 in.)	12	1	¾
Klemm No. 1	11	2	⅝ or ¾
Klemm No. 2	15	8	⅝ or ¾
Laidlaw CM and CMT	15	8	1
Laidlaw JM-30 and SM-30	16		1
Laidlaw JM and SM	11		⅝
Milband—Thompson	12	11	¾
Milclark	10	10	½ or ⅝
Napier, B	12	3	1
Napier, Jr.	8	4	¾
Racine	7	8	⅛ to ⅝
Stockbridge or H & R— 6 in.	12	5½	⅝
Stockbridge or H & R— 9 in.	13		⅝
Stockbridge or H & R—12 in.	15	5½	¾
Tannewitz-24 in.-E	13	7	up to 1¼
Tannewitz-30 in.-PI-PIE-P3-PH-PHE-P130	17		up to 1½
Tannewitz-36 in.-G3	19	6	up to 2
Tannewitz-36 in.-GH-GHE-GI-GIE-GVI.	19	9	up to 2
Tannewitz-42 in.-RI-RIE-RVI-R3-RH-RHE.	22		up to 2
Tannewitz Di-Saw 24M	13	7	⅛ to ½
Thompson	15	8	⅝ or ¾
Walker-Turner—12 in. Wheel	6	6	3/16 to ½
Walker-Turner—14 in. Wheel	8		3/16 to ½
Walker-Turner—16 in. Wheel	9	6	3/16 to ½
Wells No. 5	8	2½	½
Wells No. 8	11	7	¾
Wells No. 9	9	5	½
Wells No. 12	13	7	1
Wells No. 20 (Standard)	16		1
Wright	15	8	⅝ or ¾

CUTTING RECOMMENDATIONS

Ferrous Metals

Material	Teeth per inch	Speed ft. per min.
Carbon Tool Steel	10–14	100
Cast Iron	–14	75– 150
Cast Nickel Iron	10–14	75– 150
Chromium Steel	10–14	100
Cold Rolled Steel	10–14	150
Drill Rod	10–14	75– 200
High Chrome High Carbon Steel	10–14	50– 100
High Speed Steel	10–14	50– 150
Iconel	10–14	75– 140
Iron Sheets	14–32	100– 600
Lamination Iron	10–24	75– 500
Machine Steel	10–14	100– 200
Malleable Iron	10–14	100– 200
Manganese Steel	10–14	100
Mild Steel (not rolled)	10–14	150– 200
Nickel Silver	10–14	100– 200
Nickel Steel	10–14	75– 140
Nitralloy	10–14	50– 150
Pipe	14–18	100– 200
Stainless Steel	10–14	50– 100
Steel (structural)	10–14	150– 250
Steel (thin sheet)	14–32	400–1500
Tool Steel	10–14	100– 200
Tubing (steel)	14–18	150

Non-Ferrous Metals

Material	Teeth per inch	Speed ft. per min.
Aluminum Airplane Alloys	6–14	400–1500
Aluminum Castings	6– 8	300–1500
Aluminum, pure	6– 8	500–1500
Aluminum Sheets	10–18	300–1500
Aluminum Tubing	10–24	300–1500
Babbitt (type and bearing metal)	6–10	200– 500
Brass Castings	8–14	150– 300
Brass, Soft Screw Stock	10–18	200– 400
Brass Sheets (thin)	14–32	400–1500
Brass Tubing	14–32	400–1500
Bronze Castings	8–14	150– 500
Bronze, Government	10–14	150
Bronze, Manganese	10–14	150
Bronze, Nickel	10–14	100
Copper	10–18	100– 300 (lub)
Copper, Drawn	10–14	
Everdur	10–14	150
Monel Metal	10–14	50– 150
Monel Sheets	14–24	50– 750
Magnesium	2–3–6	1500–2000
Zinc	10–18	450–1500

Plastic and Non-Metallics

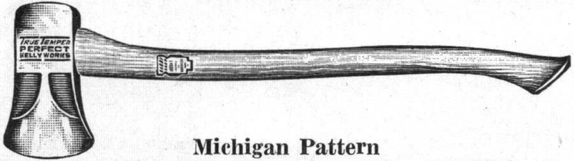
Material	Teeth per inch	Speed ft. per min.
Asbestos Board	8	400
Asbestos, Sheet	8–14	100– 500
Bakelite (plastics)	8–18	200–1000
Catalin	10–14	200–1000
Fibre	8–10	150– 450
Formica	8	400
Metal Wood	14	400– 750
Mica	10–14	300– 600
Micarta	10–14	100– 300
Porcelain	10–14	50– 300
Rubber, Hard	8–10	100– 200
Slate	10–18	50– 200

AXES

TRUE TEMPER

Forged from bars of special steel, normalized and scientifically heat treated in electric furnaces with automatic electric heat controls. Uniform texture insures uniform temper. Full ground and polished.

SINGLE BIT, HANDLED



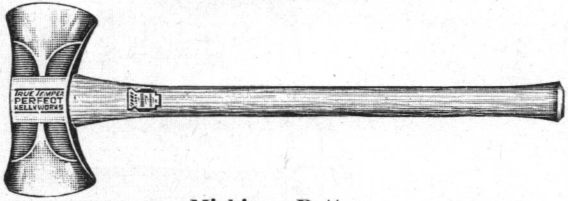
Michigan Pattern

"Perfect" grade, white hickory oval handle, 36 in. long.

Weight head, lbs.	3	3½	4
Wt. dozen, lbs.	65	68	74
Per dozen	$46.80	46.80	48.60

One-half dozen in a crate.

DOUBLE BIT, HANDLED



Michigan Pattern

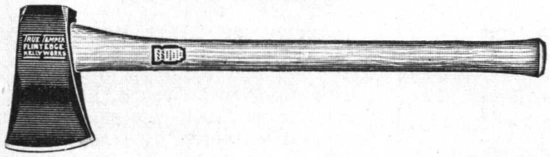
"Perfect" grade, white hickory oval handle, 36 in. long.

Weight head, lbs.	3½	4	4½
Wt. dozen, lbs.	65	68	74
Per dozen	$52.80	54.60	56.40

One-half dozen in a crate.

MAULING OR RAFTING AXES

TRUE TEMPER


TRUE TEMPER FLINT EDGE KELLYWORKS

Ideal for constructors, miners, farmers, etc. Forged steel **hardened head**—withstands constant pounding. A combination maul and axe.

Forged from highest quality axe steel; perfect white selected hickory handle.

With 26 Inch Miners' Handle

Weight head, lbs.	4	5
Wt. per dozen, lbs.	64	75
Per dozen	$51.30	54.60

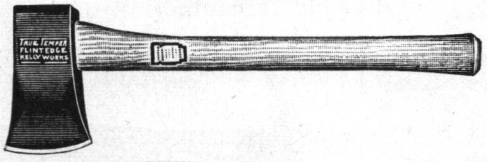
With 36 Inch Regular Handle

Weight head, lbs.	4	5
Wt. per dozen, lbs.	67	79
Per dozen	$51.60	54.90

One-half dozen in a box.

MINERS' AXES

TRUE TEMPER


TRUE TEMPER FLINT EDGE KELLYWORKS

Dayton Pattern

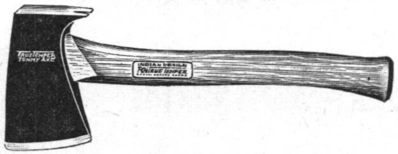
Forged from high quality selected axe steel; normalized and tempered by most modern methods. Quarter ground bit, top of head rough ground, polished cutting edge, painted head. White lacquered straight hickory handle, 26 in. long.

Weight head, lbs.	3	3½	4	5
Wt. dozen, lbs.	59	65	71	83
Per dozen	$46.80	46.80	48.60	48.60

One dozen in a crate.

TOMMY AXES

TRUE TEMPER



Dynamically Balanced

The best, most popular, all-purpose hatchet or axe.

Streamlined, power-centered designed head, just right weight, has nail claw for pulling nails and staples. Forged from finest quality tool steel; smooth black, rust-resistant finish; special design professional-type selected hickory handle.

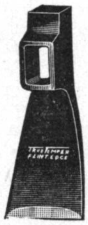
Per dozen

No. TA—1¾ lb. head; 15 in. handle; wt. per dozen 34 lbs. **$38.40**

One-sixth dozen in a box.

CARPENTERS' ADZES

TRUE TEMPER



Half Head

Forged from best grade of adze steel; professional design. Cutting edges polished and sharpened; black finish body.

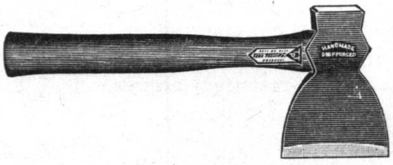
Per dozen

No. CFE4—4 in. width of cut; wt. per dozen 56 lbs. **$45.45**

One dozen in a box.

HATCHETS

BRIAR EDGE, BROAD

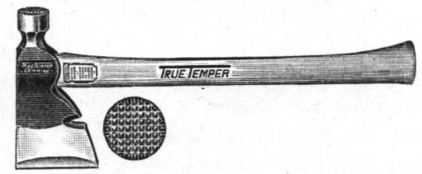


Forged high grade steel. Head ground; natural forge finish, coated and rust-resisting lacquer. Fitted with sound hickory, white lacquered handle.

Nos.	**B2**	**B4**
Size	2	4
Cut, in.	4½	5½
Handle, in.	15	16
Wt. dozen, lbs.	38	46
Per dozen	$33.30	39.90

One-half dozen in a box.

TRUE TEMPER RIG BUILDERS'



Forged from highest quality selected hatchet steel. Scored head finished gold bronze and polished. Best quality white hickory handle.

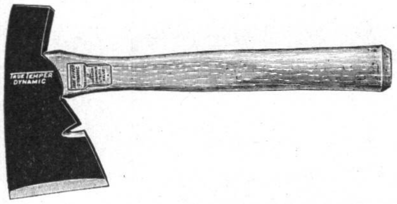
Per dozen

No. R2S—3⅝ in. cut, 18 in. handle; wt. per dozen 33 lbs. **$43.65**

One-third dozen in a box.

HATCHETS

TRUE TEMPER DYNAMIC, HALF



New design centers weight in head, giving perfect balance and feel, increases power of cutting and driving. Thin, keen blade cuts true, no wobble, slip or bounce. Driving head has the draw of finest mechanic's hammer; sinks nail fast, true and straight.

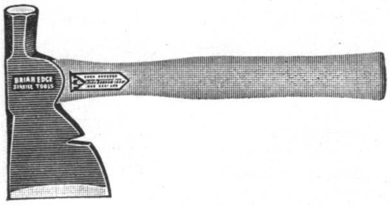
Forged from high quality hatchet steel; honed cutting edge, beveled nail slot; rustless black finish. Highest grade white hickory handle.

Per dozen

No. DH—3⅜ in. cut, 13 in. long; wt. per dozen 25 lbs. **$34.30**

One-sixth dozen in a box.

BRIAR EDGE, HALF



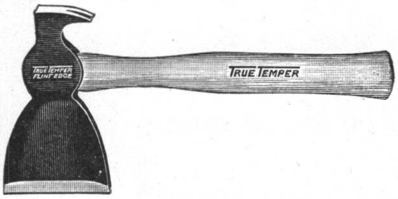
Forged hatchet steel, normalized and tempered bit, head ground, natural forge finish; coated with rust-resisting lacquer. With sound hickory, white lacquered handle.

Per dozen

No. H—3½ in. cut, 13½ in. handle; wt. per dozen 22 lbs. **$28.30**

One-half dozen in a box.

TRUE TEMPER FLINT EDGE, CLAW



Forged from high quality steel, normalized and tempered by modern methods. Head ground, polished smooth, coated with rust-resisting black. Fitted with best quality fire hardened handle.

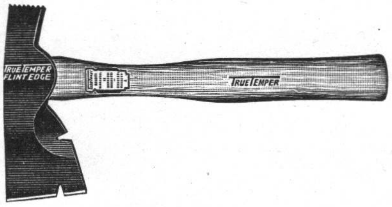
Per dozen

No. TCF—3¾ in. cut, 13½ in. handle; wt. per dozen 28 lbs. **$37.65**

One-third dozen in a box.

HATCHETS

TRUE TEMPER FLINT EDGE, PRODUCE OR BARRELING



Forged from high quality hatchet steel, normalized and tempered by modern methods.

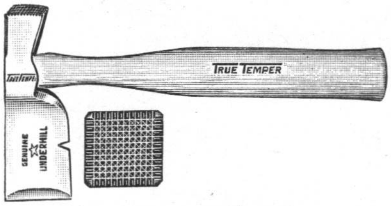
Semi-smooth rust-resisting black finish. Nail slot in blade and back; head carefully milled and hardened. Fitted with fire hardened hickory handle.

Per dozen

No. TPB—Length head 5½ in., 11 in. handle; wt. per dozen 22 lbs. **$35.00**

One-third dozen in a box.

TRUE TEMPER GENUINE UNDERHILL, LATHING



California Oval Head Pattern

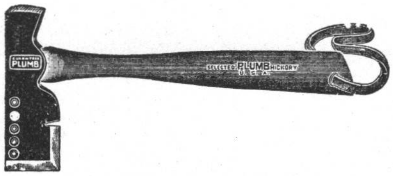
Forged from finest grade steel, carefully tempered. Thin blade; hardened, 12 row, 144 point scored head full polished. Best quality full grip white hickory handle.

Per dozen

No. 60—2⅛ in. cut, 13 in. handle; wt. per dozen 27 lbs. **$49.50**

One-third dozen in a box.

PLUMB EXPERT SHINGLING



With Gauge and Leather Strap

Forged solid steel, oval checkered head; rustless black finish. Red hickory handle with patent take-up wedge.

The gauge can be accurately and firmly set at intervals of one-half inch. Inner side of blade is sharpened to use as a draw knife.

Per dozen

No. 565½—5 hole gauge, 2⅛ in. cut, 13 in. handle; wt. per dozen 18½ lbs. **$52.90**

One-third dozen in a box.

NAIL HAMMERS

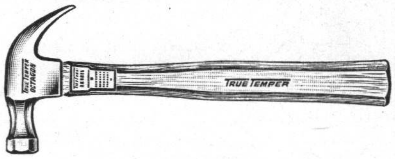
TRUE TEMPER FULL OCTAGON

Octagon Bell and Neck

Top quality throughout.

Forged, heat-treated and tempered by skilled craftsmen using most modern methods. Head, neck and bell highly polished.

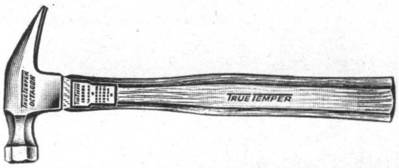
Fitted with best quality, white hickory, full octagon handle.



Curved Claw

Nos.	013	016
Wt. head, oz.	13	16
Wt. dozen, lbs.	15	18
Per dozen	$34.40	34.40

One-third dozen in a box.



Straight Claw, Ripping Pattern

Per dozen

No. 018R—18 oz. head; wt. per dozen 21 lbs. **$34.40**

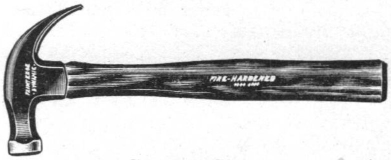
One-third dozen in a box.

TRUE TEMPER, FLINT EDGE DYNAMIC

Dynamically balanced, no sharp edges; forged from finest analysis steel, normalized and tempered by modern methods.

Head ground smooth, coated with rust-resisting black. Bell and face finely polished.

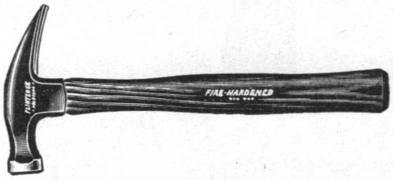
Fitted with selected hickory, professional design, fire-hardened handle.



Curved Claw

Nos.	D113	D116
Wt. head, oz.	13	16
Wt. dozen, lbs.	15	18
Per dozen	$22.70	22.75

One-third dozen in a box.



Straight Claw, Ripping Pattern

Per dozen

No. D118R—18 oz. head; wt. per dozen 21 lbs. **$22.75**

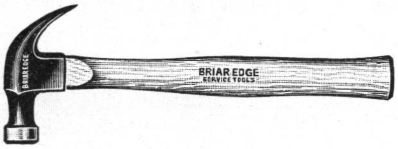
One-third dozen in a box.

NAIL HAMMERS

BRIAR EDGE BELL FACE

High grade steel head, ground, black forge finish, coated with black rust-resisting lacquer.

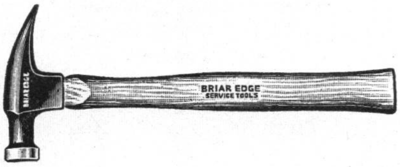
Fitted with round hickory, white lacquered handle.



Curved Claw

Nos.	207	216
Wt. head, oz.	7	16
Wt. dozen, lbs.	8	18
Per dozen	$17.50	18.55

One-half dozen in a box.



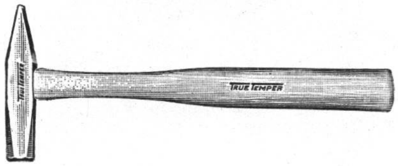
Straight Claw, Ripping Pattern

	Per dozen
No. 216R—16 oz. head; wt. per dozen 18 lbs.	$18.55

One-half dozen in a box.

MACHINISTS' RIVETING HAMMERS

TRUE TEMPER



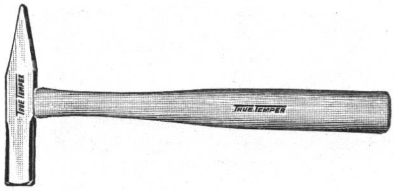
Forged high grade steel, normalized and tempered; full polished. Extra grade white hickory handle.

	Per dozen
No. 3R—12 oz. head; wt. per dozen 12 lbs.	$22.50

One-third dozen in a box.

TINNERS' RIVETING HAMMERS

TRUE TEMPER



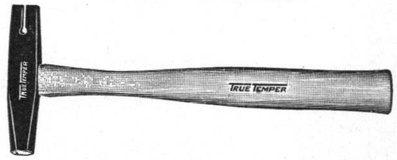
Forged high grade steel, normalized and tempered; full polished. Extra grade white hickory handle.

	Per dozen
No. 2T—12 oz. head; wt. per dozen 14½ lbs.	$22.50

One-third dozen in a box.

SAW SETTING HAMMERS

TRUE TEMPER



The most acceptable design. Used by experts in large saw factories.

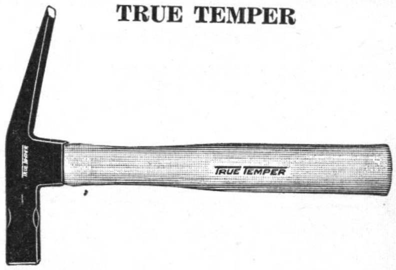
Forged high grade steel head, ground polished smooth and coated with rust-resisting black. Best quality white hickory handle.

	Per dozen
No. 43—8 oz. head; wt. per dozen 10 lbs.	$27.40

One-half dozen in a box.

BRICKLAYERS' HAMMERS

TRUE TEMPER



Forged from high grade steel, normalized and tempered. Head ground, polished smooth, coated with rust-resisting black.

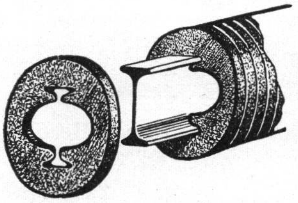
Fitted with best quality fire hardened hickory handle.

	Per dozen
No. 12BF—1½ lb. head; wt. per dozen 24 lbs.	$28.10

One-third dozen in a box.

NAIL HAMMERS

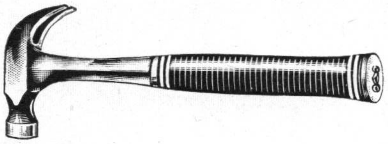
ESTWING UNBREAKABLE



Head and handle forged from one piece of fine tool steel, polished. Head can't fly off or loosen. Tempered sure-grip claw.

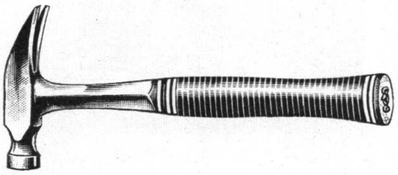
Thin neck and hollow grip give perfect balance, strength and comfort.

Grip is composed of 50 sole leather washers pressed and riveted on thin shank, lustrous non-slip finish.



Bell Face, Curved Claw, Polished

Nos.	E16C	E20C
Wt. head, oz.	16	20
Wt. per dozen, lbs.	19	22
Per dozen	$54.00	54.00



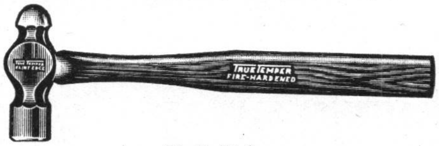
Bell Face, Ripping Claw, Polished

Nos.	E16S	E20S
Wt. head, oz.	16	20
Wt. per dozen, lbs.	19	22
Per dozen	$54.00	54.00

One-third dozen in a box.

MACHINISTS' HAMMERS

TRUE TEMPER, FLINT EDGE



Ball Pein

Forged from high grade steel, normalized and tempered by modern methods.

Head ground smooth, face and pein polished, coated with rust-resisting black.

Fitted with selected hickory, fire-hardened handle.

Nos.	Per dozen	Size	Wt. head	Wt. doz., lbs.
1308	$15.70	3/0	8 oz.	9½
12012	17.10	2/0	12 oz.	13½
1016	18.55	0	1 lb.	18
1120	20.55	1	1¼ lbs.	22½
1224	22.30	2	1½ lbs.	25
1432	23.80	4	2 lbs.	34
1640	28.30	6	2½ lbs.	40

Nos. 1308 and 12012, one-half dozen; Nos. 1016 to 1640, one-third dozen in a box.

BRIAR EDGE

Ball Pein

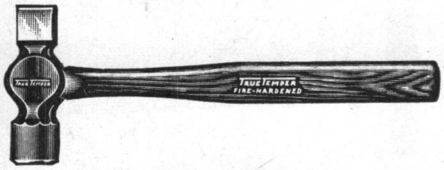
A general purpose hammer of good quality, forge finish; fitted with round white lacquered hickory handle.

Nos.	Per dozen	Size	Wt. head, lbs.	Wt. doz., lbs.
2016	$15.65	0	1	18
2120	17.50	1	1¼	21
2432	21.25	4	2	34

One-third dozen in a box.

MACHINISTS' HAMMERS

TRUE TEMPER



Straight Pein

Forged from finest grade hammer steel. Head ground, polished smooth, coated with rust resisting black.

Fitted with selected hickory, fire-hardened handle.

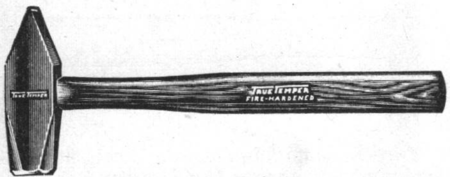
Per dozen

No. 2SP—1½ lb. head; wt. per dozen 24 lbs. $31.50

One-third dozen in a box.

BLACKSMITHS' HAND HAMMERS

TRUE TEMPER



Cross Pein

Forged from high grade steel, normalized and tempered by modern methods.

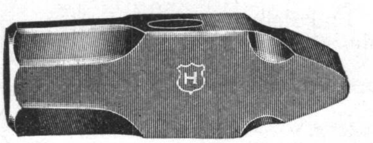
Head ground, polished smooth, coated with rust-resisting black.

Fitted with selected hickory, fire hardened handle.

Nos.	**1B**	**2B**	**3B**
Wt. head, lbs.	2	2½	3
Wt. dozen, lbs.	34	40	48
Per dozen	$34.95	38.20	41.80

One-third dozen in a box.

BLACKSMITHS' SLEDGES



No. 132—Cross Pein, Single Face

Forged steel, black finish; polished face; oval eye.

Wt. each, lbs. ..	**6**	**8**	**10**	**12**
Lgth. over all, in.	6½	7	7½	8
Lgth. head, in. ..	3½	3 13/16	4⅛	4⅜
Width face, in. .	2⅛	2 5/16	2½	2⅝
Width pein, in. .	2⅛	2 15/16	2½	2⅝
Lgth. pein, in. ..	3	3 3/16	3⅜	3⅝
Eye, in.	1x1¼	1x1¼	1x1⅜	1x1⅜

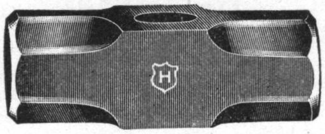
Unhandled

No. in std. pkg. .	6	6	6	6
Each	$3.90	4.40	5.30	5.95

With 36 in. Handles

No. in std. pkg. .	6	6	6	4
Each	$5.65	6.15	7.05	7.70

BLACKSMITH SLEDGES



No. 134—Double Face

Forged steel, black finish; polished faces, oval eye.

Wt. each, lbs. ..	**6**	**8**	**10**	**12**
Length, in.	6	6½	7	7½
Width face, in. .	2⅛	2¼	2½	2⅝
Eye, in.	1x1¼	1x1¼	1x1⅜	1x1⅜

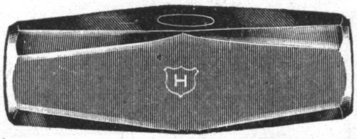
Unhandled

No. in std. pkg. .	6	6	6	6
Each	$3.65	4.10	5.10	5.85

With 36 in. Handles

No. in std. pkg. .	6	6	6	4
Each	$5.40	5.85	6.85	7.60

STRIKING OR DRILLING HAMMERS



No. 127—Nevada or Long Pattern, Flat Faces

Forged steel, black finish; polished faces, oval eye.

Wt. each, lbs.	**4**	**6**	**8**
Length, in.	5¾	6½	7¼
Width face, in.	1½	1¾	1 15/16
Eye, in.	¾x1	1x1¼	1x1¼

Unhandled

No. in std. pkg.	6	6	6
Each	$3.00	3.50	4.00

With 36 in. Handles

No. in std. pkg.	6	6	6
Each	$4.75	5.25	5.75

Wt. each, lbs.	**10**	**12**	**16**
Length, in.	7¾	8	8½
Width face, in.	2⅛	2¼	2½
Eye, in.	1x1⅜	1x1⅜	1x1⅜

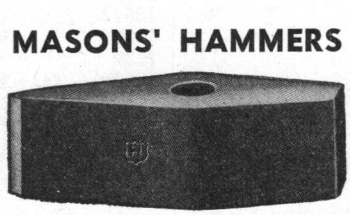
Unhandled

No. in std. pkg.	6	6	6
Each	$5.10	5.85	7.80

With 36 in. Handles

No. in std. pkg.	6	4	4
Each	$6.85	7.60	9.55

MASONS' HAMMERS



Single Face

Forged steel, black finish; polished ends; oval eye.

Each

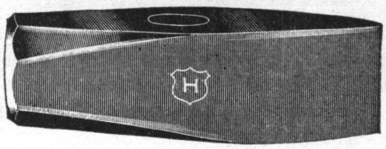
No. 128—Wt. each 3 lbs., 6 in. long, ⅞x2¼ in. face, bit 2¼ in. wide, ⅝x1⅛ in. eye

Unhandled $3.25

With 16 in. Handle 5.00

Six in a standard package.

STONE SLEDGES



Oval Face

Forged steel, black finish; polished face, oval eye.

Each

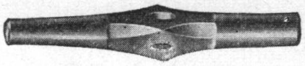
No. 131—Wt. each 12 lbs., 8¼ in. long, face 2⅝ in. wide, 2⅝ in. bit, 1x1⅜ in. eye

Unhandled $5.90

With 36 in. Handle 7.65

Unhandled, six; handled, four in a standard package.

SPIKE MAULS



Bell Pattern

Forged super-alloy steel, hardened. Has greater impact value and superior toughness and gives longer wear. Black finish, polished ends; oval eye.

Hardened throughout 2½ to 3 in. from each end.

Each

No. 310-A—15 in. long over all, large end 5½ in. long x 1⅝ in. face, small end 4½ in. long x 1¼ in. face, 1x1¾ in. eye $4.80

Six in a carton.

WOOD CHOPPERS WEDGES

No. 80—Standard or Square Head

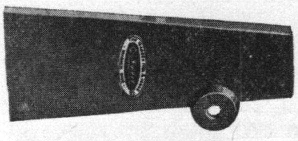
Solid forged steel; oil finish.

Wt. each, lbs.	3	4	5
Length over all, in. ...	7½	8½	9
Head, in.	1½	1⅝	1¾
Bit, in.	2	2⅛	2⅜
Each	$1.02	1.36	1.70

Six in a carton.

SAW WEDGES

WARREN



High Carbon Steel

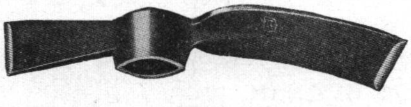
Hand forged; smooth finish. With link.

Nos.	**A264**	**B264**	**264**
Wt. each, lbs. ...	1	1½	2
Each	$0.34	.51	.68

Open stock.

MATTOCKS

SHORT CUTTER



Adze Eye

Forged steel, black finish, polished bevel.

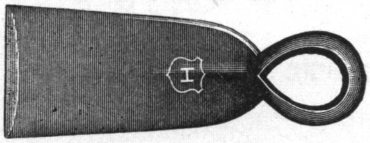
Per dozen

No. 1—Width blade 3½ in., length blade 8 in., width cutters 3 in., length cutter 4¾ in., length over all 15¾ in.; wt. each 5 lbs.; wt. per dozen 60 lbs. **$40.35**

One-half dozen in a standard package.

GRUB HOES

WESTERN PATTERN



Adze Eye

Forged steel, black finish, polished bevel.

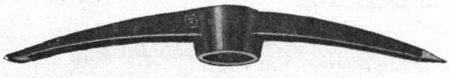
Per dozen

No. 20—Width blade 3¾ in., length blade 7¾ in., length over all 10¾ in.; wt. each 3½ lbs.; wt. per dozen 42 lbs. **$37.80**

One-half dozen in a standard package.

PICKS

RAILROAD OR CONTRACTORS



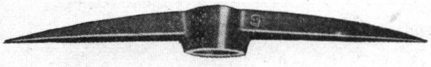
No. 30—Standard Pattern

Forged steel, black finish.
No. 6 eye.

Wt. each, lbs.	6	7	8
Length, in.	23	25	26
Width chisel, in.	1¼	1¼	1½
Wt. dozen, lbs.	80	93	105
Per dozen	$37.10	40.95	45.45

One-half dozen in a standard package.

DRIFTING



No. 49—Narrow Adze Eye

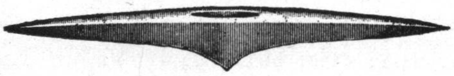
Forged steel, black finish.
No. 10 eye.

Size, Nos.	2	4	5
Wt. each, lbs.	4	5	6
Length, in.	21	25	26
Wt. dozen, lbs.	54	67½	80
Per dozen	$35.25	38.85	40.35

One-half dozen in a standard package.

PICKS

BRENNAN PATTERN, COAL



Anchored

Forged steel, black finish.

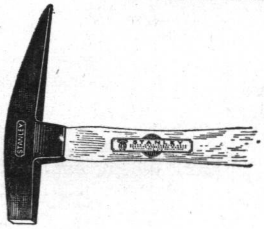
Wt. each, lbs.	2	2½	3
Per dozen	$24.90	25.95	27.15

Wt. each, lbs.	3½	4
Per dozen	$28.50	29.85

One-half dozen in a standard package.

PROSPECTING PICKS

STANLEY-ATHA



Drop Forged Steel

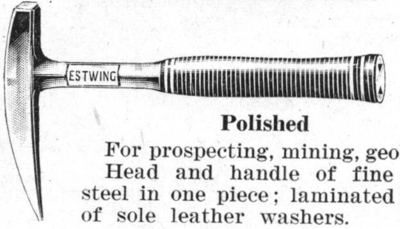
Smooth black finish, polished face.

Best quality hickory handle.

Nos.	251	252
Wt. head, oz.	16	24
Length, in.	13	13
Wt. dozen, lbs.	16½	22½
Per dozen	$33.00	37.20

One-half dozen in a box.

ESTWING PICK-HAMMER



Polished

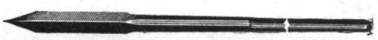
For prospecting, mining, geology. Head and handle of fine tool steel in one piece; laminated grip of sole leather washers.

Per dozen

No. E-30—Wt. head 22 oz.; wt. per dozen 25 lbs. **$42.00**

One-third dozen in a box.

LINING BARS



Diamond Point

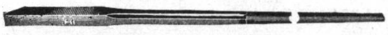
Solid steel, oil finish.

Each

No. 262—5 ft. long, 1¼ in. square point 3 in. long; wt. each 18 lbs. **$4.20**

Open stock.

CROW BARS



No. 260—Pinch Point

Forged steel; black finish.

Size, in.	1⅛x51	1¼x60
Wt. each, lbs.	12	18
Each	$4.20	5.55

Open stock.

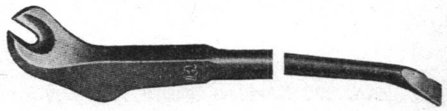
No. 261—Wedge Point or Lining

Forged steel; black finish.

Size, in.	1¼x60
Wt. each, lbs.	18
Each	**$5.55**

Open stock.

CLAW BARS



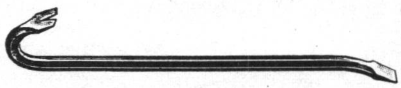
No. 252—With Heel

Forged steel, black finish.
A.R.E.A Plan No. 11.

Length, ft.	5
Spike size, in.	9/16x⅝
Claw opening, in.	⅞
Wt. each, lbs.	28
Each	**$12.75**

Open stock.

CARPENTERS' RIPPING BARS



No. 354—Gooseneck

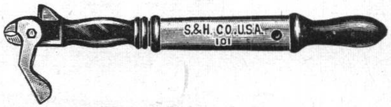
Forged octagon steel; black finish.

Length, in.	12	18	24	30
Stock, in.	½	⅝	¾	¾
Wt. each, lbs.	⅞	2	3½	4¼
Each	$0.40	.80	1.20	1.45

Open stock.

NAIL PULLERS

GIANT



Forged Steel Jaws

Equipped with box chisel and strap cutter. Box joint keeps jaws in perfect alignment.

Aluminum finished rammer, blue body and hand hold, polished jaws.

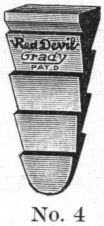
Each

No. 101—12 in. rammer, 20 in. long over all; wt. each 5¾ lbs. **$4.85**

Twelve in a case.

HANDLE WEDGES

GRADY



No. 4

Non-Rusting Metal

Scientifically designed for all sizes of hammers, hatchets, axes and other tools. Holds like a fish hook, will not chip or break.

Nos.	2	3	4
Width, in.	5/16	7/16	⅜
Length, in.	13/16	13/16	15/16
Dozen in box	3	3	3
Wt. dozen, oz.	1	1½	2
Per dozen	$0.36	.36	.40

Nos.	5	10	15
Width, in.	9/16	13/16	1⅜
Length, in.	13/16	1¼	1⅜
Dozen in box	3	2	1
Wt. dozen, oz.	3½	5	10
Per dozen	$0.48	.72	1.12

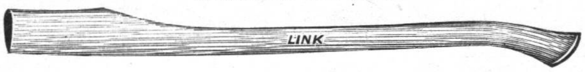
TOOL HANDLES

Grades

No. 100 Series—Carefully selected, straight grained, good weight white hickory handle.

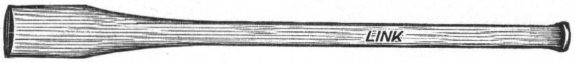
No. 200 Series—White hickory stock admitting slight blemishes which never impair the serviceability of the handle.

SINGLE BIT AXE



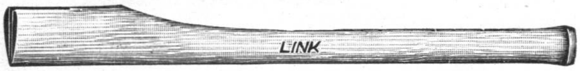
Nos.	MS126	MS226
Length, in.	36	36
Wt. dozen, lbs.	20	20
Per dozen	$16.80	14.00

DOUBLE BIT AXE



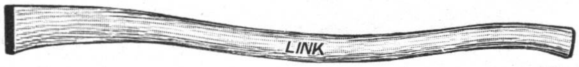
	Per dozen
No. MS127—36 in. long; wt. per dozen 20 lbs.	$16.80

MINERS' AXE



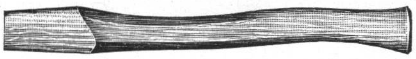
Nos.	MS124	MS125
Length, in.	26	28
Wt. dozen, lbs.	15	16
Per dozen	$14.00	14.00

CARPENTERS' OR RAILROAD ADZE



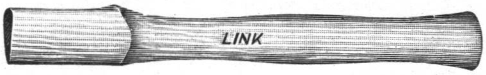
	Per dozen
No. MS111—34 in. long; wt. per dozen 20 lbs.	$20.30

TOMMY AXE



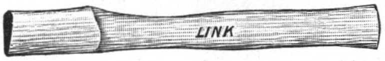
	Per dozen
No. MS128—15¾ in. long; wt. per dozen 7 lbs.	$6.75

BROAD HATCHET



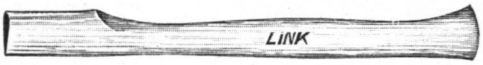
Nos.	MS141	MS142
Length, in.	16	18
Wt. dozen, lbs.	7	8
Per dozen	$6.75	8.50

SHINGLING OR HALF HATCHET



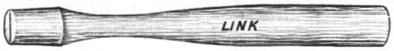
	Per dozen
No. MS143—14 in. long; wt. per dozen 5 lbs.	$6.30

RIG BUILDERS' HATCHET



	Per dozen
No. MS146—18 in. long; wt. per dozen 8 lbs.	$9.40

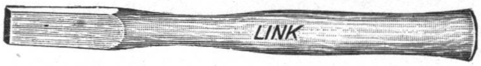
LATHING HATCHET



	Per dozen
No. MS144—14 in. long; wt. per dozen 5 lbs.	$6.30

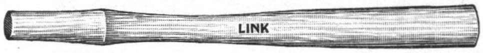
All above, one dozen in a carton.

ADZE EYE NAIL



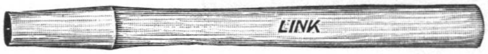
Nos.	MS151	MS152
Length, in.	14	16
Wt. dozen, lbs.	5	7
Per dozen	$5.55	5.85

MACHINISTS' HAMMER



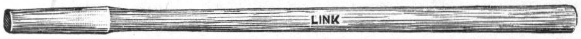
Nos.	MS161	MS162	MS163	MS164
Length, in.	12	14	16	18
Wt. dozen, lbs.	4	5	7	8
Per dozen	$5.55	5.55	5.85	6.65

BLACKSMITHS' HAMMER AND SINGLE JACK



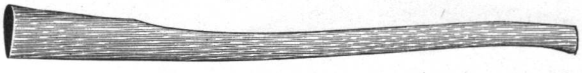
Nos.	MS171	MS172	MS173
Length, in.	16	18	24
Wt. dozen, lbs.	7	8	14
Per dozen	$5.85	6.65	10.30

SLEDGE OR MAUL



Nos.	MS181	MS182	MS183	MS184	MS284
Length, in.	30	32	34	36	36
Wt. dozen, lbs.	16	17	18	19	19
Per dozen	$14.80	14.80	15.45	15.45	11.20

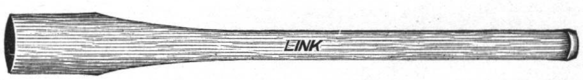
GRUB HOE



Curved

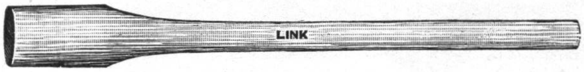
	Per dozen
No. MS131—36 in. long; wt. per dozen 30 lbs.	$18.70

COAL PICK



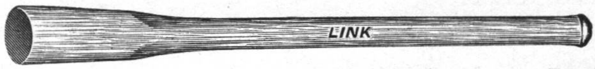
	Per dozen
No. MS191—34 in. long; wt. per dozen 22 lbs.	$17.00

DRIFT PICK



	Per dozen
No. MS192—34 in. long; wt. per dozen 22 lbs.	$17.00

RAILROAD PICK

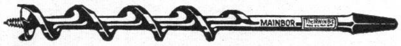


	Per dozen
No. MS293—36 in. long; wt. per dozen 30 lbs.	$16.20

All above, one dozen in a carton.

AUGER BITS

GENUINE IRWIN MAINBOR



No. 62T—Solid Center

Made from special bit steel, heat treated and accurately tempered and hardened full length. Head has strong, long wearing double cutters and extension lips. Screw point has a medium fast pitch for general all around boring in practically every kind of wood. A clear, open throat provides a quick clearance for chips and prevents clogging and binding.

Each bit is individually wrapped in waterproof paper.

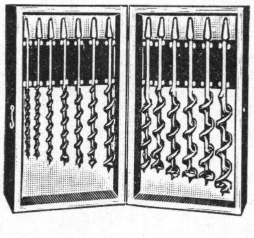
Size in., 16ths	Per dozen	Lgth., in.	Twist, in.	Wt. doz., lbs.
4	$ 8.10	7½	4	1⅛
5	8.10	7⅝	4	1¼
6	8.10	7¾	4⅛	1½
7	8.80	7⅞	4⅛	2
8	8.90	8	4 3/16	2¼
9	9.50	8⅛	4¼	2½
10	9.60	8¼	4⅜	3
11	10.55	8⅜	4½	3½
12	10.55	8½	4⅝	4
13	12.05	8⅝	4 11/16	4¼
14	12.05	8¾	4¾	4½
15	13.55	8⅞	4 13/16	5
16	13.55	9	4⅞	6
18	15.80	9⅛	4 11/16	6½
20	18.05	9¼	5	8
22	19.30	9⅜	5¼	9
24	22.60	9½	5½	10

4/16 to 16/16, one-half dozen; larger sizes, one-quarter dozen in a box.

AUGER BIT SETS

IRWIN MAINBOR BORCHEST

Hardwood Case



Beautifully finished; with strong, durable hinges and fastener.

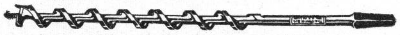
Each bit held in place by 2 spring clips; easily removed or replaced.

	Per set
No. BBM-62T—Home Set, consists of 6 No. 62T bits, one each 4, 6, 8, 10, 12 and 16/16ths; wt. per set 2¾ lbs.	$6.60
No. DM-62T—Carpenter Set, consists of 13 No. 62T bits, one each 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 and 16/16ths; wt. per set 4¾ lbs.	12.90

One set in a carton.

ELECTRICIANS' BITS

IRWIN



No. 3-E—Solid Center

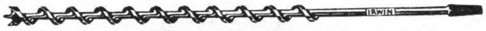
Special auger bit steel; heat treated full length; oil finish. Length of twist 6 in.

Size in., 16ths	Per dozen	Wt. dozen, lbs.
10	$11.60	3
11	12.90	3½
12	12.90	3½

One-half dozen in a box.

CAR BITS

IRWIN



No. 65-T—Solid Center

Forged from special bit steel; heat treated full length, polished oil finish, double cutter and lips, with screw.

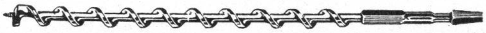
12 in. twist, 18 in. long over all.

Size in., 16ths	Per dozen	Wt. doz., lbs.
4	$14.00	3
5	14.00	3
6	14.00	4
7	14.80	4
8	15.20	5
9	16.90	6
10	18.70	7
11	20.50	7
12	$22.20	8
13	23.80	9
14	26.00	10
15	28.00	10
16	30.00	11
18	35.70	13
20	41.20	14

4/16 to 16/16ths, one-half dozen; larger sizes, one-quarter dozen in a box.

SHIP AUGERS

IRWIN



No. 55-S—Solid Center; with Four-Way Shank

Special bit steel, heat treated; side lip cutter, open throat. Full polished and oil finished.

Can be used for bit brace, electric drill or auger handle, as it has brace, round and square shank, any one of which can be cut off for purpose required. Extension rod can be welded on if required.

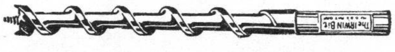
12 in. twist, 20 in. long over all.

Size in., 16ths	Per dozen	Wt. doz., lbs.
7	$22.40	3
8	22.40	4
9	23.50	5
10	24.40	6
11	26.00	7
12	29.00	8
13	30.00	9
14	$33.00	11
15	34.00	11
16	36.00	12
17	38.00	13
18	39.50	14
19	47.00	15
20	47.00	16

7/16 to 16/16ths, one-half dozen; larger sizes, one-quarter dozen in a box.

MACHINE BITS

IRWIN



No. 62-RC—Solid Center

Made specifically for use in power drills.

Special bit steel, heat treated; double cutter, extension lips. Full polished. Sturdy stem increases in size as it nears the shank where the greatest strain occurs.

Made regularly in 4, 6, 8, 10 and 12 in. twist lengths, all with ½x2 in. shanks.

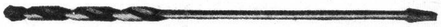
Available in the following sizes in all twist lengths: 4/16, 5/16, 6/16, 7/16, 8/16, 9/16, 10/16, 11/16, 12/16, 13/16, 14/16, 15/16 and 16/16 in.

For over all lengths of any machine bit add shank length (2 in.) to twist length.

Prices on Request

BELL HANGERS' DRILL BITS

CLEVELAND



No. 114E—24 in. Long

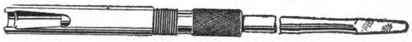
Extra quality steel, polished and tempered. Taper square shank 3/16x⅜x1¼ in. long.

Diam., in.	Per dozen	Wt. doz., lbs.
¼	$13.00	3¾
5/16	13.50	4
⅜	14.50	4½
½	17.00	6

One-half dozen in a box.

BIT EXTENSIONS

STANLEY



No. 180—Will Follow 11/16 Inch Bit

Shank and socket forged in one piece, hardened and tempered. Nut and knurled grip case hardened. Seamless steel tubing sleeve. Nickel plated.

These tools extend a bit so that the user can bore through walls, floors, etc., where the bit alone will not reach.

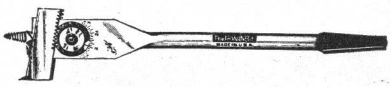
Bit capacity up to 1 in.

Length, in.	18	24
Wt. each, lbs.	1	1¼
Each	$3.00	3.60

One in a box.

EXPANSIVE AUGER BITS

IRWIN MICRO-DIAL



Dial Micrometer Adjustment

The micrometer dial adjustment and positive lock device are features that have made this the fastest selling expansive bit on the market.

Drop forged from special bit steel and heat treated full length. All parts are carefully machined to within proper tolerances. Cutting edges machined and sharpened to provide clean, easy boring.

Highly polished.

	Per dozen
No. 21—With 2 cutters, one boring ⅝ to 1 in., the other 1 to 1¾ in.; wt. per dozen 4¼ lbs.	$27.30

One in a box.

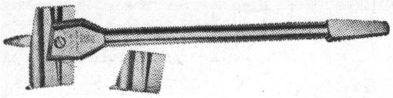
Extra Cutters for No. 21

Nos.	21S	22S
Bores, in.	⅝–1	1–1¾
Per dozen	$7.20	8.40

One dozen in a box.

EXPANSIVE AUGER BITS

CLARK C.C.



With specially engineered cutting blade which sets a new standard of accurate, fast, clean, smooth cutting in hard or soft wood.

Cuts easier; simplified design; tilted blade, no cutter lip.

Chrome vanadium steel blades, hold sharp cutting edge longer.

All chromed body; no rust; looks better, lasts longer.

Quick, accurate adjustment; positive lock; no blade slippage.

Self-clearing lead screw; constant feed, no loading.

Regardless of the diameter of the hole whether through thin or thick material, only light pressure is needed to cut quickly and evenly.

Each

No. 250—7¾ in. long over all, with two cutters from ½ to 1½ in.; wt. each 8 oz. $1.69

One in a box.

Extra Cutters for No. 250 Bit

Nos.	250-S	250-L
Bores, in.	½ to ⅞	⅞ to 1½
Each	$0.60	.65

Open stock.

Each

No. 251—8¼ in. long over all, with two cutters, boring from ⅞ to 3 in.; wt. each 12 oz. $1.89

One in a box.

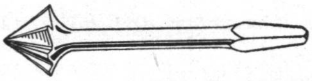
Extra Cutters for No. 251 Bit

Nos.	251-S	251-L
Bores, in.	⅞ to 1½	1½ to 3
Each	$0.65	.75

Open stock.

COUNTERSINKS

STANLEY



Rose Type, for Wood or Metal

Hardened and tempered high quality tool steel, polished finish. Clean and sharp cutting edges.

Per dozen

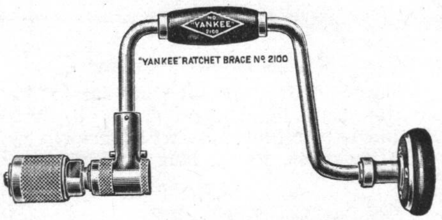
No. 139—¾ in. cutting edge, length over all 4 in.; wt. per dozen 2½ lbs. $9.00

One-half dozen in a box.

Your Inquiries for Hand Tools Other Than Shown in this Catalog Will Receive our Prompt Attention.

BIT BRACES

YANKEE



No. 2101—Ratchet; Ball Bearing Chuck

Highest quality brace for all users who want a deluxe, durable tool. Preferred by public utilities and telephone companies.

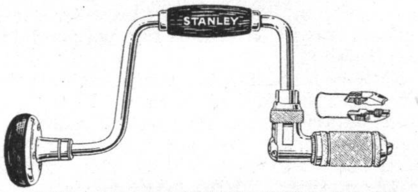
Nickel plated, steel sweep, hard rubber handle and steel clad ball bearing head. Dust and moisture-proof ratchet case, hardened and tempered tool steel pawls, quick, positive shifter.

Quick centering ball bearing chuck holds any bit, round, square or taper up to ½ in. Will take square shank bits up to ⅝ in. across corners.

Sweep, in.	10	12
Wt. each, lbs.	3⅛	3¼
Each	$11.80	12.10

Six in a box.

STANLEY



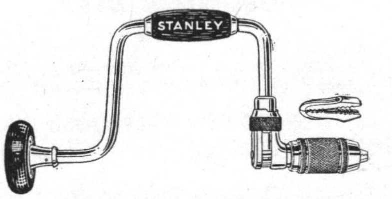
No. 923—Box Ratchet, Ball Bearing Head

Steel clad ball bearing head, selected cocobolo head and handle. Strong sturdy box ratchet. Nut and cotter pin lock entire chuck in place.

Improved forged and hardened Universal jaws hold straight shank bits and drills from ⅛ to ½ in. inclusive and taper shank as large as No. 2. Nickel plated finish.

Sweep, in.	8	10	12
Wt. each, lbs.	3	3¼	3½
Each	$7.25	7.25	7.50

Two in a box.



No. 945—Open Ratchet, Ball Bearing Head

The most popular medium priced bit brace.

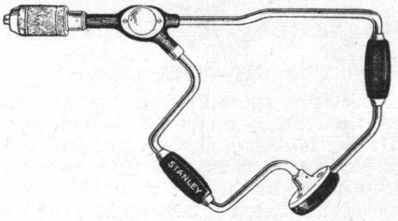
Nickel plated steel sweep; black finished native hardwood handle and ball bearing head; cast steel pin type alligator jaws.

Sweep, in.	10	12
Wt. each, lbs.	2⅞	3⅛
Each	$4.50	4.80

Six in a box.

CORNER BRACES

STANLEY



Universal Jaws

Phosphor bronze gear frame, bevel gears, teeth carefully cut, nickel plated, metal clad head, cocobolo head and handles, steel shell.

The metal clad quill is fastened to the head by three screws. The whole mechanism is enclosed to protect it from dirt and to guard the user's hands.

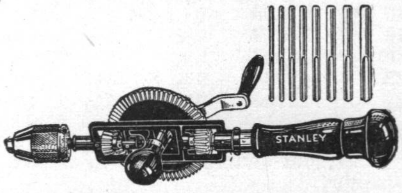
Each

No. 993—10 in. sweep; wt. each 4½ lbs. $14.95

Two in a box.

HAND DRILLS

STANLEY



Single Speed, with Drill Points

Gray iron gear, 4 in. diam., steel pinion gear and pinion teeth machine cut, malleable iron parallel sided frame.

Heavy duty chuck, locked on spindle, concealed jaw springs.

Frame and gear finished in black, nickel plated trim. Red lacquered handles. Detachable side knob.

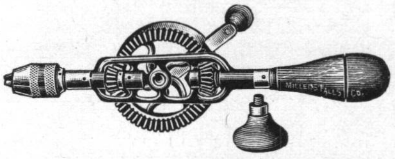
Hollow hardwood handle contains eight drill points, size $\frac{1}{16}$ to $\frac{11}{64}$ in.

Each

No. 624—13¾ in. long, three-jaw chuck holding up to ⅜ in. straight shanks; wt. each 2⅛ lbs. $6.50

One in a box.

MILLERS FALLS



MILLERS FALLS CO.

Single Speed, With Drill Points

Equipped with a wide rim on the large drive gear; can be easily grasped by thumb and fingers to start small drills on delicate work.

Red enameled gear, nickeled rim; black enameled frame; nickel plated drive and equalizing pinions. Hardwood hollow screw cap handle contains 8 drill points $\frac{1}{16}$ to $\frac{11}{64}$ in.

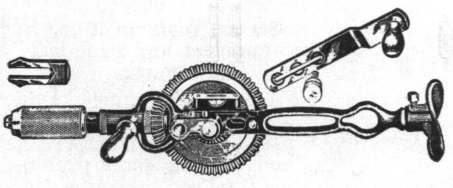
Each

No. 5—12⅛ in. long, three-jaw chuck holding up to ¼ in. straight shank drills; wt. each 1⅝ lbs. $6.00

One in a box.

BREAST DRILLS

MILLERS FALLS



Two-Speed; Level Attached

Universal Master chuck with a capacity of ⅛ to ½ in. round shank drills and No. 1 Morse taper shanks.

Black enameled frame and breast plate; red enameled gear; nickel plated trim. Mahogany finished hardwood handles.

Adjustable ball bearing spindle; extensible crank. Gear ratio 3 to 1 and 1 to 1.

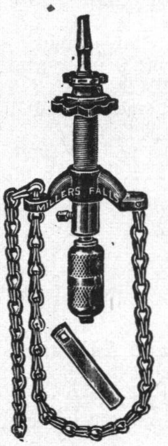
Each

No. 12—17½ in. long, cap. ½ in.; wt. each 6½ lbs. $8.50

One in a box.

CHAIN DRILLS

MILLERS FALLS BALL BEARING



An auxiliary tool for use with a breast drill or bit brace when extra power is needed or where pressure cannot be easily applied.

The drill is automatically fed into the work. Reverse movement of brace withdraws the drill. Hand feed can be used if desired.

Black japanned frame, nickel plated socket and bit shank. Each drill is equipped with 4 feet of stout chain.

With Two-Jaw Master Chuck

Each

No. 718—11½ in. long; two-jaw master chuck holds ⅛ to ½ in. round shank, No. 1 Morse taper and bit shank drills; wt. each 4½ lbs. $8.00

One in a box.

Built To Meet The Needs of the

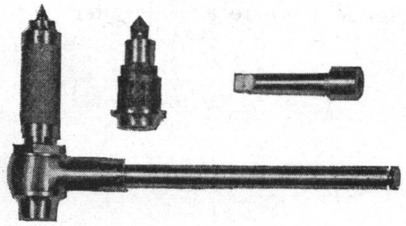
TRADE WE SERVE

This Catalog Brings Our Stock to Your Desk Top

Our Buying Resources are at Your Command

RATCHET DRILLS

KEYSTONE REVERSIBLE COMBINATION No. 200



Pawl and feed screw of special alloy steel, carefully heat treated. Drop forged steel body. High tensile strength steel tubing handle; other parts of bar steel with wearing parts hardened. Attractive polished finish.

Reverse motion is obtained by withdrawing and taking half turn of knob at end of handle. The sockets are secured in the holder by a thread cap and can be easily and quickly removed.

Strong and durable, yet light weight.

For Square Shank Ratchet and Morse Taper Shank Drills

Ratchet for taper shank drills; sleeve for square shank drills and short boiler socket for square shank drills. Sockets are interchangeable.

The above combination of standard parts are interchangeable and by their use the tool can be converted for Morse taper or ⅝x⅜x1½ in. ratchet drills, also into a short feed boiler ratchet.

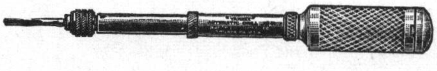
Nos.	51A	51	52
Lgth. hdle., in.	9	10	14
Morse taper, No.	1	2	3
Sq. taper, No.	Bit stock	1	1
Wt. each, lbs.	2¼	4⅞	9
Each	$10.75	11.50	13.00

Nos.	53	54
Lgth. handle, in.	16	18
Morse taper, No.	3	4
Sq. taper, No.	1	2
Wt. each, lbs.	10⅛	16½
Each	$14.00	15.25

One in a box.

AUTOMATIC DRILLS

YANKEE



Knurled Metal Handle

Sturdy and dependable; standard with mechanics everywhere.

Steel and brass, chrome plated and polished, magazine in handle for holding drill points. The drill point revolves backward in upward movement of handle to clear chips.

Improved chuck holds drill point so it cannot be pulled out when tool is in use.

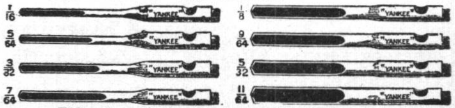
Per dozen

No. 41—10¾ in. long over all, 11¼ in. long with drill, complete with 8 drill points 1/16 to 11/64 in.; wt. per dozen 8¼ lbs. $4.75

One in a box.

AUTOMATIC DRILL POINTS

YANKEE



Illustrations one-half actual size.

For No. 41 Drill Straight Sizes

Size, in.	1/16	5/64	3/32	7/64
Per dozen	$1.80	1.80	1.80	1.80
Size, in.	**⅛**	**9/64**	**5/32**	**11/64**
Per dozen	$1.80	1.80	1.80	1.80

One dozen in a box.

Assorted Sizes

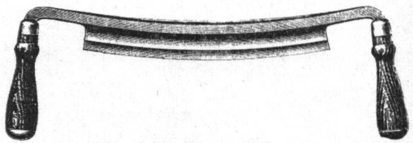
Per set

No. 9—Set, consists of 8 drill points, 1/16 to 11/64 in., as illustrated above, will fit No. 41 Yankee automatic drills $1.15

One set in a round wooden box, twelve sets in a carton.

DRAWING KNIVES

GREENLEE



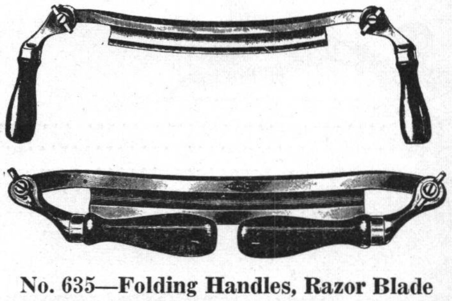
No. 600—Razor Blade

1⅜ in. solid tool steel blade, highly polished; hardwood handles; nickel plated heavy steel caps and ferrules.

The blade is conveniently light due to concave section between cutting bevel and rib, yet substantially stiff and rigid to assure years of dependable service.

Length blade, in.	8	9	10
Lgth. over all, in.	13⅛	14⅛	15⅛
Wt. dozen, lbs.	13¾	14½	18
Per dozen	$27.00	28.80	31.20

One-half dozen in a box.



No. 635—Folding Handles, Razor Blade

Solid tool steel blade, highly polished; hardwood handles; nickel plated trimmings; high grade malleable shanks and wing nuts.

Handles slotted to fold over blade, protecting cutting edge and preventing injury to anything it may contact.

Length blade, in.	8	10
Length over all, in.	13¾	15¾
Wt. doz., lbs.	21	22½
Per dozen	$56.00	61.00

One in a box.

PLANES

STANLEY

Standard Everywhere

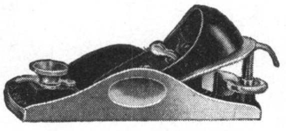
Complete Line: All sizes, block, smooth, jack, fore and jointer planes.

Quality Line: Better design—better materials—better workmanship.

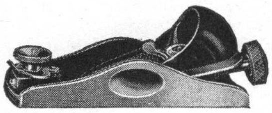
Cutter or Plane Iron: Extra high carbon steel cutting edge backed by a lower body.

Adjustable: Endwise and sidewise.

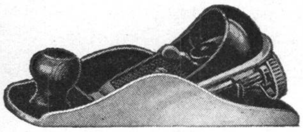
IRON BLOCK PLANES



No. 9½



No. 60½



No. 220

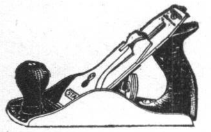
With features and refinements to suit the most exacting woodworker, No. 9½ regular and No. 60½ low angle block planes are first quality mechanics' tools.

The No. 220 is a popular plane recommended for all ordinary and intermittent work.

Nos.	9½	60½	220
Length, in.	6	6	7
Size cutter, in.	1⅝	1⅜	1⅝
Adjustment	Throat	Throat	Screw
Wt. each, lbs.	1½	1⅛	1¼
Each	$3.80	4.00	2.70

One in a box.

IRON SMOOTH PLANES

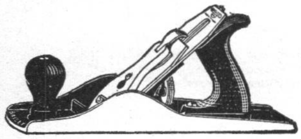


Plain or Corrugated Bottom (C) Adjustable

Nos.	2	3 or 3C	4 or 4C	4½ or 4½C
Length, in.	7	8	9	10
Size cutter, in.	1⅝	1¾	2	2⅜
Wt. each, lbs.	2½	3½	3¾	4⅞
Each	$6.60	6.60 6.80	6.90 7.10	8.40 8.70

One in a box.

IRON JACK PLANES

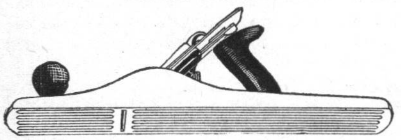


Plain or Corrugated Bottom (C) Adjustable

Nos.	5 or 5C
Length, in.	14
Size cutter, in.	2
Wt. each, lbs.	4¾
Each	$7.50 7.70

One in a box.

IRON FORE AND JOINTER PLANES



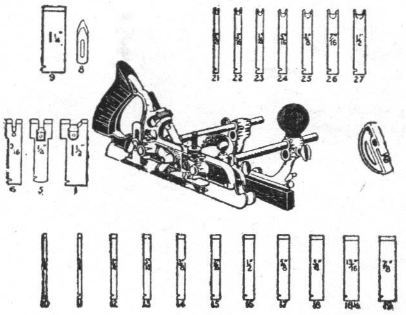
Plain or Corrugated Bottom (C) Adjustable

Nos.	6 or 6C	7 or 7C	8 or 8C
Length, in.	18	22	24
Size cutter, in.	2⅜	2⅜	2⅝
Wt. each, lbs.	6⅞	7½	8¼
Each	$11.00 11.30	13.40 13.70	15.00 15.40

One in a box.

COMBINATION PLANES

STANLEY FORTY-FIVE



Seven Tools in One, in Compact and Practical Form

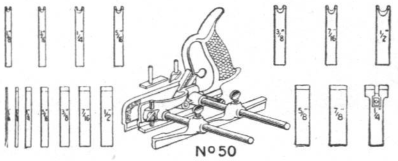
Beading plane, plow, dado, rabbet and filletster match plane, sash plane and slitting plane; nickel plated iron frame; rosewood handle, knob and fence.

Each plane is regularly supplied with 11 plow and dado cutters, ⅛, 3/16, ¼, 5/16, ⅜, 7/16, ½, ⅝, ¾, 13/16 and ⅞ in.; seven beading tools, ⅛, 3/16, ¼, 5/16, ⅜, 7/16 and ½ in.; one 1½ in. sash tool, one each 3/16 and ¼ in. match tool; one 1¼ in. filletster and one slitting tool.

	Each
No. 45—11 in. long; with 23 cutters; wt. each 9½ lbs.	$31.00

One in a box.

STANLEY FIFTY



A Small Combination Plane for Light Work

Can be used as a plow, beading, matching or rabbet plane. Fitted with spurs, depth gauge, shaving deflector and fence. The fence has a 5 in. adjustment. Nickel plated.

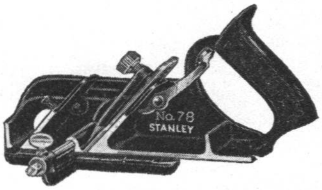
Each plane is supplied with 17 cutters as follows: 9 plow and dado cutters—⅛, 3/16, ¼, 5/16, ⅜, 7/16, ½, ⅝ and ⅞ in. wide; 7 beading cutters—⅛, 3/16, ¼, 5/16, ⅜, 7/16 and ½ in. wide; and 1 tonguing cutter ¼ in. wide.

	Each
No. 50—9¼ in. long; wt. each 3¾ lbs.	$18.00

One in a box.

RABBET PLANES

STANLEY DUPLEX



With Depth Gauge and Adjustable Fence

Japanned iron body; nickel plated trimmings; with spur for working across grain.

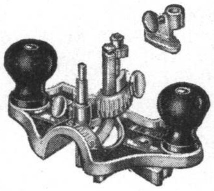
This plane has two seats for the cutter, one for regular work and the other where a bull-nose is required. The adjustable fence can be used on either side and slides under the bottom, regulating the width of the cut.

	Each
No. 78—8½ in. long; 1½ in. cutter; wt. each 3 lbs.	$5.40

One in a box.

ROUTER PLANES

STANLEY



For surfacing the bottom of grooves or other depressions parallel with the surface of the work. A wooden bottom of any size can be attached to router on large openings.

Open Throat

With attachment for closing throat; for use on narrow surfaces and regulating depth of cut.

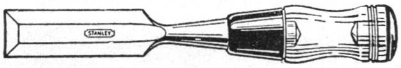
Nickel plated; hardwood knobs.

	Each
No. 71—7½ in. long, ¼ and ½ in. cutters and patent smoothing cutter; wt. each 2⅝ lbs.	$7.00

One in a box.

WOOD CHISELS

STANLEY TANG BUTT



No. 60—Bevel Blade, "Stanloid" Handle

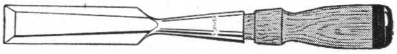
Forged thin steel blade, carefully heat treated and highly polished. "Stanloid" two-tone composition handle. Properly used, these handles will be good for the life of the chisel. The upper portion of handle is transparent amber, the lower portion is opaque black.

Length of blade 3 inches.

Width, in.	Each	Length, in.	Wt. per doz., lbs.
¼	$2.10	7⅞	2¾
⅜	2.10	7⅞	3
½	2.10	7⅞	3½
⅝	2.30	8¼	3¾
¾	2.30	8¼	4
1	2.50	8⅜	4½
1¼	2.90	8½	6
1½	4.00	9	7¼

Two in a box.

STANLEY SOCKET BUTT



No. 750—Beveled Blade

Blade and socket forged from one piece of high grade steel, heat treated and tempered.

Selected hickory handle, leather tipped. Mahogany colored.

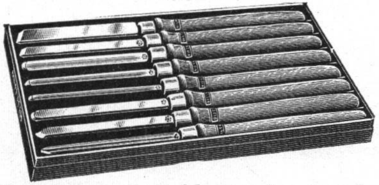
Length of blade 3¼ inches.

Width, in.	Each	Length, in.	Wt. per doz., lbs.
¼	$1.55	9½	2¼
⅜	1.55	9½	2¼
½	1.55	9½	2½
⅝	1.65	9½	2¾
¾	1.65	9½	3
⅞	1.70	9½	3¼
1	1.70	10	3½
1¼	1.95	10	5
1½	2.20	10	6

¼ through 1 in., six; 1¼ and 1½ in., two in a box.

WOOD TURNING CHISELS

DISSTON



Finest tool steel blades, hardened and ground with correct bevel. Polished finish.

Forged tang is driven into hardwood handle. Handles are 10 in. long, have brass ferrules and clear lacquer finish. Blades 6¾ in. long; 16¾ in. long over all.

Contents of Set

1—½ in. Parting Chisel.
1—½ in. Round Nose Chisel.
1—½ in. Spear Point Chisel.
1—¼ in. Gouge.
1—½ in. Gouge.
1—¾ in. Gouge.
1—½ in. Skew.
1—1 in. Skew.

Per set

No. D-I-S—Set, contains 8 chisels and gouges as enumerated above, put up in a display box; wt. per set 5¼ lbs. **$15.00**

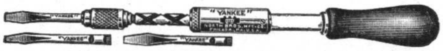
One set in a box.

SCREW DRIVERS

YANKEE SPIRAL RATCHET

Regular Style, Right and Left Hand, and Rigid

Drives and draws screws by pushing on handle, or by ratchet movement, and can be made rigid as an ordinary screw driver by a lock when closed. The movement is changed instantly by a shifter. Three bits of different sizes furnished with each driver. Chromium plated metal parts, polished hardwood handle.



Standard Pattern

Each

No. 30A—13 in. long when closed, 18¼ in. long extended; wt. each 1⅛ lbs. $5.50

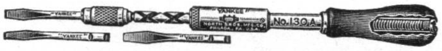
Heavy Pattern

Each

No. 31A—16¾ in. long when closed, 25 in. long extended; wt. each 1¾ lbs. $7.00

Quick Return Style, Right and Left Hand, and Rigid

Spring pressure keeps blade in screw slot and pushes handle back after each stroke, so driver can be used with one hand, otherwise same as regular Yankee Spiral Ratchet.



Standard Pattern

Each

No. 130A—14¾ in. long when closed, 20 in. long extended; wt. each 1¼ lbs. $6.00

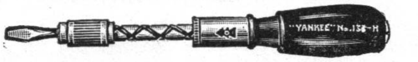
Heavy Pattern

Each

No. 131A—19⅜ in. long when closed, 27½ in. long extended; wt. each 2 lbs. $7.50

All above, one in a box.

YANKEE "HANDYMAN" QUICK-RETURN SPIRAL RATCHET



Right and Left Hand and Rigid

A light model of the quick return style Yankee spiral ratchet screw driver for occasional use.

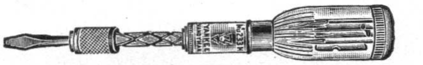
Drives and draws screws by pushing on the handle or by a ratchet movement or can be made rigid as an ordinary screw driver. The movement is changed instantly by a simple shifter.

Nickel plated finish, ebony finished wood handle. With one bit ¼ in. wide.

Each

No. 133H—9⅝ in. long with bit extended; wt. each ½ lb. $2.75

Four in a display box.



Right and Left Hand and Rigid

Same construction as No. 133H except has transparent magazine handle.

Furnished with ¼ and 5/32 in. bits and 5/64, 7/64 and 9/64 in. drill points.

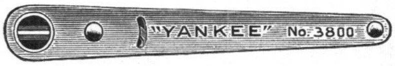
Each

No. 233H—10 in. long with bit extended; wt. each ⅔ lb. $4.00

Three in a display box.

SCREW DRIVERS

YANKEE OFFSET, RATCHET



Heavy Type, with Two Blades

A powerful vest pocket tool that needs only an inch or so of clearance. Blades are of special alloy steel, properly hardened and tempered to insure satisfactory performance even when used on self-tapping screws.

Finished in chromium plate.

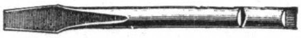
Each

No. 3800—4¾ in. long; ⅜x.045 in. small blade, 7/16x.060 in. large blade; wt. each 2 oz. $1.10

Six in a box.

SCREW DRIVER ACCESSORIES

YANKEE SCREW DRIVER BITS



In Sets

For Yankee Spiral Ratchet Screw Drivers

Highest quality steel, scientifically hardened and tempered. 3⅞ in. long over all.

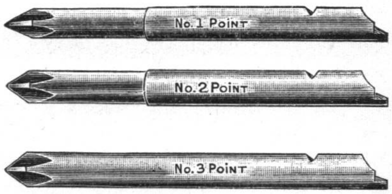
Per set

No. 3010—3 assorted bits, 7/32, ¼ and 9/32 in. wide, for screw sizes Nos. 4, 5, 6 and larger; for Nos. 30A and 130A screw drivers; wt. per set 2 oz. $0.90

No. 3110—3 assorted bits, ¼, 9/32 and 5/16 in. wide, for screw sizes 5, 6, 7 and larger; for Nos. 31A and 131A screw drivers; wt. per set 2 oz. .... .90

One set in an envelope.

YANKEE PHILLIPS BITS



For Use in Yankee Spiral Ratchet Screw Drivers

For Phillips recessed head screws and bolts. Highest quality steel, scientifically hardened and tempered. 3¼ in. long over all.

For Nos. 30A and 130A Screw Drivers

Nos.	301	302	303
Point, No.	1	2	3
Each	$0.50	.50	.50

For Nos. 31A and 131A Screw Drivers

Nos.	311	312	313
Point, No.	1	2	3
Each	$0.50	.50	.50

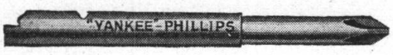
Point Sizes

No. 1 Point drives No. 4 screws and smaller.
No. 2 Point drives No. 5 to 9 screws.
No. 3 Point drives No. 10 to 16 screws.

Twelve in a box.

SCREW DRIVER ACCESSORIES

YANKEE "HANDYMAN" PHILLIPS BITS



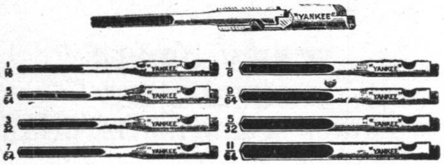
For Use in "Handyman" Screw Drivers

For Phillips recessed head screws and bolts.

Nos.	351	352
Drive screws, Nos.	4 and smaller	5 to 9
Each	$0.50	0 50

Twelve in a box.

YANKEE CHUCKS AND DRILLS



Illustrations half size.

For Yankee Spiral Ratchet Screw Drivers

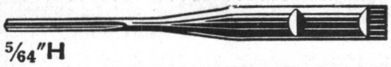
Per dozen sets

No. 309—Chuck and 8 drills 1/16 to 11/64 in. for Nos. 30A and 130A Yankee screw drivers; wt. per dozen sets 1¼ lbs. $11.20

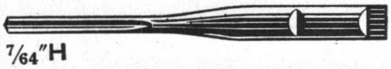
No. 319—Chuck and 8 drills 1/16 to 11/64 in. for Nos. 31A and 131A Yankee screw drivers; wt. per dozen sets 1¼ lbs. 11.20

One set in a box.

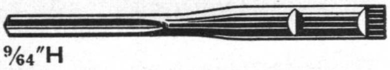
YANKEE "HANDYMAN" DRILL POINT SETS



5/64"H



7/64"H



9/64"H

For Use in "Handyman" Screw Drivers

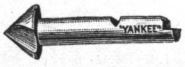
These points convert the Handyman screw driver into a drill. No chuck adapter is required.

Per set

No. 333H—Consists of three drills, one each 5/64, 7/64 and 9/64 in., put up in a celluloid container, three containers on a display card; wt. per card 5½ oz. $0.58

Three sets on a display card, one card in a box.

YANKEE COUNTERSINKS



For Use in Yankee Spiral Ratchet Screw Drivers

Per dozen

No. 3030—3/32 in. for Nos. 30A and 130A Yankee screw drivers; wt. per dozen 9 oz. $6.00

No. 3130—5/16 in. for Nos. 31A and 131A Yankee screw drivers; wt. per dozen 10 oz. 6.00

One dozen in a box.

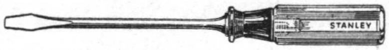
SCREW DRIVERS

STANLEY "STANLOID" TRANSPARENT HANDLE

With Hammer-proof, Shock-proof Handles

Polished forged special steel blades, hardened and tempered with tips accurately machine cross ground to size. Heavy wings on tang make it impossible for blade to turn in handle. A bolster forged integral with the blade adds strength against prying strains and prevents blade being driven up into the handle.

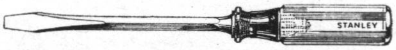
"Stanloid" transparent two-tone amber colored handles are made from the toughest non-metallic substance known; it is shock-proof and will not soak up oil or water. Nose portion black and extreme end red.



No. 1006—Regular Pattern, Round Shank

Blade, in.	4	6	*8	*12
Over all, in.	7¾	10¼	13	17½
Diam., in.	¼	5/16	⅜	7/16
Wt. doz., lbs.	3½	5½	8	11½
Per dozen	$11.40	15.00	19.20	27.00

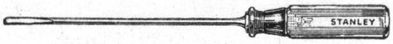
*Has nut shaped bolster.



No. 1007—Heavy Square Blade

Blade can be gripped with a wrench or pliers for turning heavy screws.

Blade, in.	4	6	8	12
Over all, in.	7¾	10¼	13	17⅝
Bar, in.	¼	5/16	⅜	⅜
Wt. dozen, lbs.	3½	5½	8	11½
Per dozen	$13.20	17.40	23.40	28.80

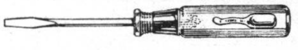


No. 1008—Cabinet or Electricians' Pattern, Round Bar

Sides of tip are parallel and of the same width as the diameter of the blade so that a countersunk screw can be followed up without marring the work.

Blade, in.	3	6	10
Over all, in.	6⅞	9½	13⅜
Diam., in.	3/16	3/16	3/16
Wt. dozen, lbs.	2	3¼	4
Per dozen	$10.20	10.70	12.00

Above, one-half dozen in a box.



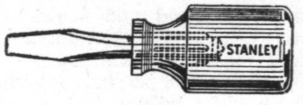
Pocket Size; with Clip

Will turn a good size screw; yet it is small enough to carry in the vest pocket. Nickel plated blade.

Per dozen

No. 1010—2 in. blade, ⅛ in. bar, 4 in. long over all; wt. per dozen 1 lb. $3.00

One dozen in a display box.



Stubby

For working in close quarters.

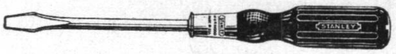
Per dozen

No. 1012—1 in. blade, ¼ in. bar, 1¼ in. diam. handle; wt. per dozen ⅛ lb. $7.20

One-half dozen in a box.

SCREW DRIVERS

STANLEY HURWOOD



Tempered forged steel blade, polished and lacquered to prevent rust; black fluted hardwood handle; blade, shank and head forged from one piece of steel. Two projecting wings on head with rivet through ferrule, handle and shank prevents blade from twisting. Blade extends through handle to head for added strength.

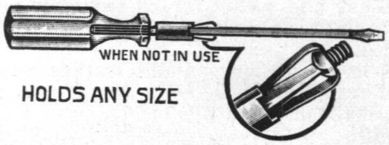
No. 20—Regular Pattern, Round Shank

Blade, in.	3	4	5
Over all, in.	8	9	10½
Diam., in.	7/32	¼	5/16
Wt. dozen, lbs.	2	2¾	4¼
Per dozen	$7.80	8.40	8.40

Blade, in.	6	8
Over all, in.	11¾	15
Diam., in.	5/16	⅜
Wt. dozen, lbs.	5	8
Per dozen	$9.00	12.00

One-half dozen in a box.

HOLD-E-ZEE, SCREW HOLDING



Patented Spring Action Gripper

Instantly holds, starts and sets up any size screw in unhandy places. Special spring steel fingers hold tightly—with instant release gripper automatically sliding out of the way, giving full use as a regular screw driver.

High impact, transparent plastic hexagon handle of new concave sure-grip design; gives perfect insulation.

For Light Work

Automotive, electrical, radio, household appliances, etc.

Nos.	R-2	R-3	TR-4
Lgth. blade, in.	2	3	4
Lgth. over all, in.	4¼	5¾	7¼
Diam. blade, in.	5/32	5/32	5/32
Wt. dozen, lbs.	½	1	1¼
Per dozen	$4.80	6.60	8.40

Nos.	TR-6	TR-8
Lgth. blade, in.	6	8
Lgth. over all, in.	9⅝	11⅝
Diam. blade, in.	5/32	5/32
Wt. dozen, lbs.	1½	1¾
Per dozen	$9.00	9.60

No. R-2, one dozen; Nos. R-3 to TR-8, one-half dozen in a box.

For General All-Around Usage

No. TH-8 is for heavy duty work.

Nos.	TS-4	TS-7	TH-8
Lgth. blade, in.	4	7	8
Lgth. over all, in.	8¼	11¼	12⅞
Diam. blade, in.	7/32	7/32	5/16
Wt. dozen, lbs.	2¼	3	5¾
Per dozen	$9.60	10.20	16.80

One-half dozen in a box.

SCREW DRIVERS

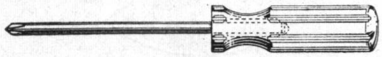
STANLEY-PHILLIPS

For Phillips Recessed Head Screws and Bolts

Precision machined and have gauged points to assure an accurate fit in the recessed heads of Phillips screws.

Plastic Handles; Carbon Steel Bars

Blade polished and tempered. Handle of tough plastic, shaped and fluted for a comfortable grip.

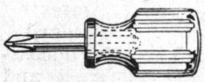


Regular Pattern

Nos.	1721	1722
Point size	1	2
For Phillips screws	1 to 4	5 to 9
Blade, in.	2½x9/64	3½x¼
Wt. dozen, lbs.	1	2½
Per dozen	$5.36	7.20

Nos.	1723	1724
Point size	3	4
For Phillips screws	10 to 16	18 and up
Blade, in.	5½x5/16	5½x⅜
Wt. dozen, lbs.	4	6
Per dozen	$9.50	13.00

One-half dozen in a box.



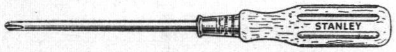
Stubby Pattern

Nos.	1711	1712
Point size	1	2
For Phillips screws	1 to 4	5 to 9
Blade, in.	1x9/64	1½x¼
Wt. dozen, lbs.	1½	2
Per dozen	$4.80	6.60

One-half dozen in a box.

Wood Handles; Alloy Steel Bars

Tempered, polished blade, held in handle by two ears swaged on the shank. Hardwood handle, natural color, and deeply fluted.

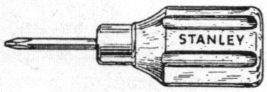


Regular Pattern

Nos.	2701	2702
Point size	1	2
For Phillips screws	1 to 4	5 to 9
Blade, in.	3x9/64	4x¼
Wt. dozen, lbs.	1¾	2¾
Per dozen	$5.10	5.40

Nos.	2703	2704
Point size	3	4
For Phillips screws	10 to 16	18 to 20
Blade, in.	6x5/16	8x⅜
Wt. dozen, lbs.	4	6
Per dozen	$7.20	9.60

One-half dozen in a box.



Stubby Pattern

Nos.	2711	2712
Point size	1	2
For Phillips screws	1 to 4	5 to 9
Blade, in.	1x9/64	1½x¼
Length over all, in.	2⅞	3½
Wt. dozen, lbs.	1	1½
Per dozen	$5.10	5.40

One-half dozen in a box.

COLD CHISELS

CRESCENT

CRESCENT TOOL CO. 160

No. 160—Regular Pattern

Forged tool steel, specially hardened and tempered. These chisels have a keen, tough cutting edge that will stand a lot of hard service.

Cut, in.	Per dozen	Length, in.	Stock, in.	Wt. dozen, lbs.	Dozen in a box
¼	$ 5.94	4¾	¼	⅞	1
5/16	6.66	5	5/16	1¼	1
⅜	7.38	5½	⅜	2 1/16	1
½	7.74	6	½	3 13/16	1
⅝	8.64	6½	⅝	6¼	½
¾	11.52	7½	¾	9½	½
⅞	13.50	8	⅞	14	½
1	16.74	8½	1	19	½

DIAMOND POINT CHISELS

CRESCENT

CRESCENT TOOL CO. 164

No. 164—Forged Tool Steel

Hardened and tempered, tough cutting edge that will stand hard service.

Cut, in.	Per dozen	Length, in.	Stock, in.	Wt. dozen, lbs.	Dozen in a box
5/16	$ 9.54	6	½	3¾	1
⅜	11.52	6½	⅝	6¼	½
½	14.58	7½	¾	10¼	½

CAPE CHISELS

CRESCENT

CRESCENT TOOL CO. 165

No. 165—Forged Tool Steel

Hardened and tempered, tough cutting edge that will stand hard service.

Cut, in.	Per dozen	Length, in.	Stock, in.	Wt. dozen, lbs.
¼	$ 7.74	5½	⅜	1 11/16
5/16	9.54	6	½	3¼
⅜	11.52	6½	⅝	7⅝
½	14.58	7½	¾	10
⅝	17.46	8	⅞	13⅛
¾	19.44	8½	⅞	14

¼ and 5/16, one dozen; ⅜ to ¾ in., one-half dozen in a box.

CENTER PUNCHES

CRESCENT

CRESCENT TOOL CO. 486

No. 486—Forged Tool Steel

Hardened and tempered. Tough and serviceable.

Stock, in.	Per dozen	Length, in.	Wt. dozen, lbs.
¼	$5.94	3½	9/16
5/16	5.94	4	1
⅜	7.38	5	1¾
½	9.36	6	3½

One dozen in a box.

LINING UP PUNCHES

CRESCENT

CRESCENT TOOL CO. 95

No. 95—Forged Tool Steel

Specially hardened and tempered. For automobile repair work.

Tip, in.	Per dozen	Length, in.	Taper, in.	Stock, in.	Wt. dozen, lbs.
3/16	$ 9.36	9	6	½	4 3/16
¼	12.78	10	7	⅝	7¾
⅜	16.02	12	9	¾	14¾

3/16 and ¼ in., one dozen; ⅜ in., one-half dozen in a box.

LONG PIN PUNCHES

CRESCENT

CRESCENT TOOL CO. 490

No. 490—Forged Tool Steel

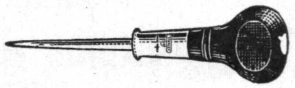
Specially hardened and tempered, straight and true.

Point, in.	Per dozen	Length, in.	Stock, in.	Wt. doz., lbs.
⅛	$8.46	9	½	4
5/32	8.46	9	½	4
3/16	8.46	9	½	4 5/16
¼	8.46	9	½	4 7/16
5/16	8.46	9	½	4 9/16
⅜	8.46	9	½	4⅞

One dozen in a box.

SCRATCH AWLS

STANLEY "HURWOOD"



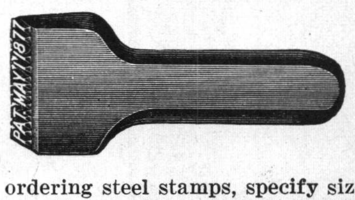
Tempered Point

Blade, shank and head formed from one piece of steel; black finish hardwood handle. Flat sides on handle prevent rolling and give a good grip.

	Per dozen
No. 7—3½ in. blade, 6½ in. over all, ¼ in. diameter; wt. per dozen 2¼ lbs.	$5.60

One-half dozen in a box.

STEEL HAND STAMPS

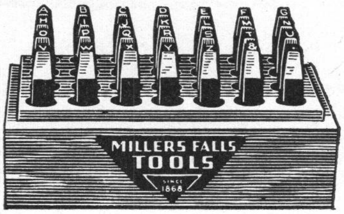


In ordering steel stamps, specify size of letter or figure, also whether Gothic or Roman letters.

Prices on Request

STEEL LETTERS AND FIGURES

MILLERS FALLS


MILLERS FALLS
TOOLS
SINCE 1868

Machine Made

For stamping mild steel and other soft metals. They should not be used on hardened or tempered material. Made of hardened steel, natural finish.

No. 1500—Letters

A set of letters, through ¼ in. size, consists of 28 characters including & and a period. A set of letters, ⅜ and ½ in. sizes, consists of 27 characters, the period being omitted.

Size, in.	Per set	Single Letters each	Wt. per set, lbs.
⅛	$5.25	$0.30	2
3/16	6.75	.35	2⅜
¼	8.25	.40	3¼
⅜	12.00	.55	6½
½	16.50	.70	7

No. 1550—Figures

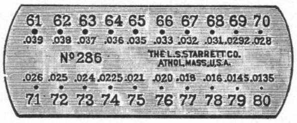
A set of figures consists of numbers 1, 2, 3, 4, 5, 6, 7, 8 and 0. The 6 being used for figure 9 by reversing.

Size, in.	Per set	Single Figures each	Wt. per set, lbs.
⅛	$1.75	$0.30	1
3/16	2.25	.35	1⅛
¼	2.75	.40	1¼
⅜	4.00	.55	2⅜
½	5.50	.70	2¾

One set in a wood box with separate space for each character.

DRILL AND STEEL WIRE GAUGES

STARRETT


61 62 63 64 65 66 67 68 69 70
.039 .038 .037 .036 .035 .033 .032 .031 .0292 .028
Nº286
THE L.S.STARRETT CO.
ATHOL,MASS.,U.S.A.
.026 .025 .024 .0225 .021 .020 .018 .016 .0145 .0135
71 72 73 74 75 76 77 78 79 80

Hardened

Gives the number and decimal equivalents of standard size drills from 61 to 80 inclusive, also adapted to gauge fine drill rod.

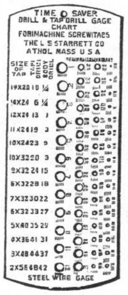
Each

No. 286—Size 2x¾x1/16 in.; wt. each 2 oz. $3.80

Three in a box.

TAP AND DRILL GAUGES

STARRETT


TIME SAVER
DRILL & TAP DRILL GAGE CHART
FOR MACHINE SCREW TAPS
THE L.S. STARRETT CO
ATHOL MASS U.S.A.
STEEL WIRE GAGE

"Time Saver"

Conforms to the National Coarse and National Fine thread series. Indicates size of drill to suit standard sizes of machine screw taps; also gives wire drills sizes 1 to 60 and thousandths of an inch. Hardened, ground and rubbed to a bright finish, tested after hardening.

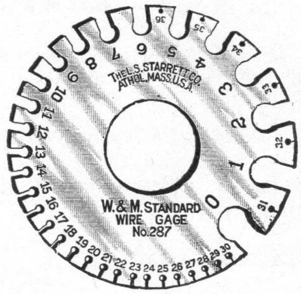
Each

No. 185—6¼ in. long, 2 15/16 in. wide; 5/64 in. thick; wt. each 6 oz. ..$3.90

Three in a box.

WIRE GAUGES

STARRETT


THE L.S.STARRETT CO.
ATHOL,MASS.U.S.A.
W.&M.STANDARD
WIRE GAGE
No.287

Washburn and Moen Standard

Black finish; carefully tested after hardening.

Decimal equivalents are stamped on reverse side.

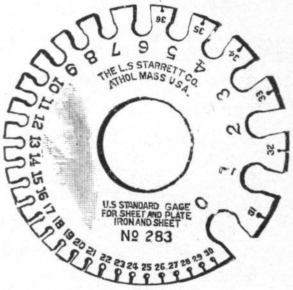
For gauging steel wire and drill rod.

Each

No. 287—Takes Nos. 0 to 36; wt. each 3½ oz. $4.10

SHEET AND PLATE GAUGES

STARRETT


THE L.S STARRETT CO.
ATHOL MASS U.S.A.
U.S STANDARD GAGE
FOR SHEET AND PLATE
IRON AND SHEET
Nº 283

United States Standard

For uncoated steel and iron sheets and plates.

Hardened, black finish.

Decimal equivalents of each number stamped on reverse side of gauge.

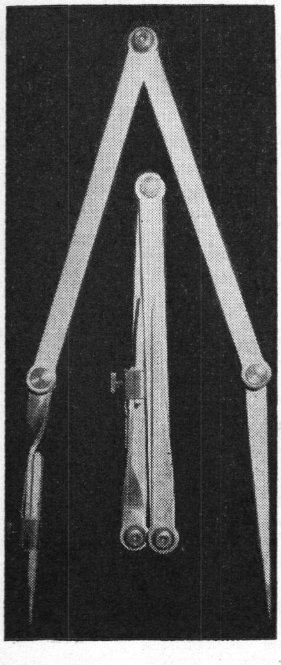
Each

No. 283—Nos. 0 to 36, diam. 3¼ in.; wt. each 3½ oz. $4.10

All above, two in a box.

RADIUS MARKERS

JOINTED



Spans 24 in. Radius

Made of S. T. 24 Aluminum Dural.

Folds into a neat compact unit measuring only 9¼ in. in length.

The pencil holder is made to hold round or flat pencil, soapstone or steel point.

A very handy tool for welders and all mechanics doing layout work.

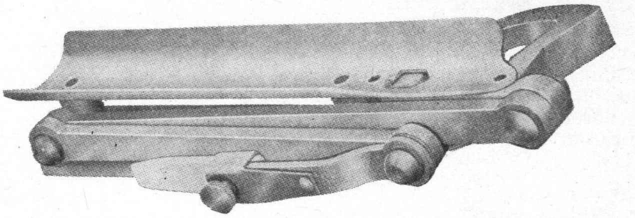
Each

Radius Marker—24 in.; wt. each 8 oz. $3.75

One in a box.

CONTOUR MARKERS

JOINTED



Simplifies Layout Jobs on Pipe and Structural Steel

Saves time, labor and gas as it eliminates the old cut and dry method. Speedy and accurate.

Sturdily constructed. Protractor graduated on one side in degrees of angle and on the other side in inches. Divided in two sectors to measure from the axis or perpendicular to the axis of the pipe.

A book of simple, easily understood instructions furnished with each tool.

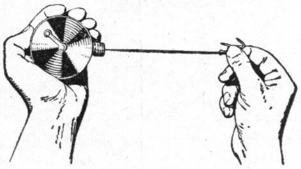
Each

Contour Marker—Wt. each 1¼ lbs. $19.95

One in a box.

CHALK LINES AND REELS

SEYMOUR



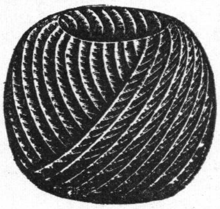
Eliminates Hand Chalking

Enclosed in a cadmium plated steel case with 50 ft. of chalk line and filled with powdered chalk to last a year. A handy dual purpose hook holds the line at any point. Has crank for winding. For masons, carpenters, sign painters, decorators, etc.

	Per dozen
No. 238-B—3 in. diameter; wt. per dozen 6 lbs.	$11.25
Extra Chalk Refills — One ounce blue chalk in a sealed envelope	1.35

One in a box, one dozen in a carton.

CHALK LINES



Twisted Cotton, In Balls
50 ft. Balls

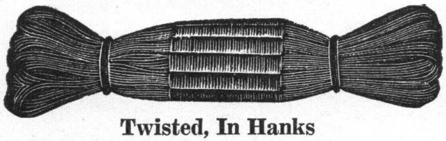
	Per dozen balls
No. 4—15 thread	$1.15
No. 6—21 thread	1.40

100 ft. Balls

	Per dozen balls
No. 4—15 thread	$1.95
No. 6—21 thread	2.30

One dozen balls in a box.

MASONS' LINES



Twisted, In Hanks

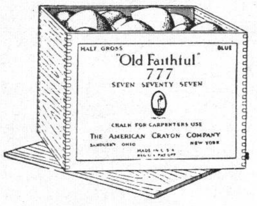
100 ft. in a hank.
21 thread.

	Per dozen hanks
No. 6—White	$2.60
No. 6—Yellow	3.00

One dozen hanks in a box.

CARPENTERS' CHALK

OLD FAITHFUL


HALF GROSS
BLUE
"Old Faithful"
777
SEVEN SEVENTY SEVEN
CHALK FOR CARPENTERS USE
THE AMERICAN CRAYON COMPANY
SANDUSKY, OHIO
NEW YORK

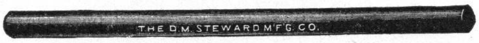
In 2½ in. Diameter Cakes

Hemispherical shaped cakes. Used by carpenters, machinists, paper hangers and surveyors, etc.

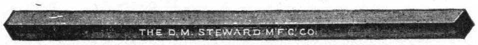
	Per gross
No. 777—White	$4.20
No. 777—Blue	4.80

Weight per gross 10 pounds.
One-half gross in a box.

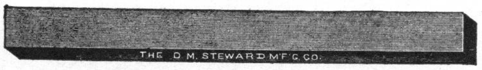
SOAPSTONE PENCILS


THE D.M. STEWARD M'F'G. CO.

Round


THE D.M. STEWARD M'F'G. CO.

Square


THE D.M. STEWARD M'F'G. CO.

Flat

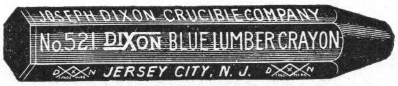
Carefully selected high grade soapstone.

	Per gross
Round—5x¼ in.; wt. per gross 5 lbs.	$6.75
Square—5x¼x¼ in.; wt. per gross 6 lbs.	4.20
Flat—5x½x3/16 in.; wt. per gross 8 lbs.	4.35

One gross in a box.

LUMBER CRAYONS

DIXON, COLORED


JOSEPH DIXON CRUCIBLE COMPANY
No.521 DIXON BLUE LUMBER CRAYON
JERSEY CITY, N.J.

Hexagon Shape

For marking steel and iron, concrete and stone, and lumber in all stages of preparation—from the raw logs up—freight cars, packing cases, heavy wrapping paper, etc. Sun and rainproof.
4½ in. long, ½ in. diameter.

Black Graphite, Lacquered Finish

	Per gross
No. 361—Medium; wt. per gross 10 lbs.	$14.40

Colored, Paper Covered

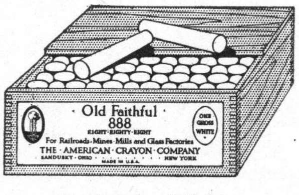
	Per gross
No. 495—Brown	$14.40
No. 496—Yellow	14.40
No. 497—Terra Cotta	14.40
No. 520—Red	14.40
No. 521—Blue	14.40
No. 522—Green	14.40

Weight per gross 12 pounds.

One dozen in a box, one-half gross in a carton.

RAILROAD CRAYONS

OLD FAITHFUL


Old Faithful
888
EIGHT EIGHTY EIGHT
For Railroads Mines Mills and Glass Factories
THE AMERICAN CRAYON COMPANY
SANDUSKY, OHIO
NEW YORK
ONE GROSS WHITE

In 4x1 in. Sticks

For temporary markings, easily erased. Used by railroads, mines, mills, foundries, machinists, etc.

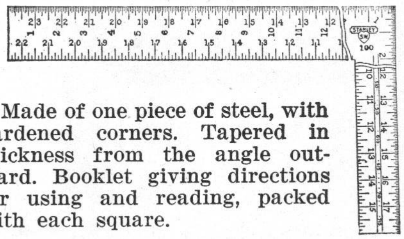
	Per gross
No. 888—White	$3.75
No. 888—Blue	4.50

Weight per gross 14 pounds.

One gross in a box.

STEEL SQUARES

STANLEY CARPENTERS'



Made of one piece of steel, with hardened corners. Tapered in thickness from the angle outward. Booklet giving directions for using and reading, packed with each square.

Two Foot, Polished

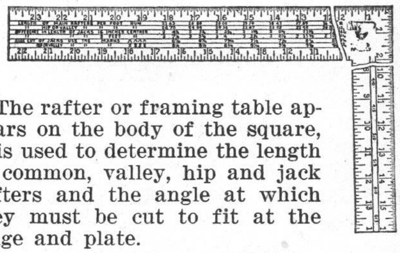
	Per dozen
No. 100—Body 24x2 in., tongue 16x1½ in.; marked 1/16 and 1/8 in. on face; 1/16, 1/10 and 1/12 in. on back; brace, octagon, Essex board measure and 100ths scale; wt. per dozen 25 lbs.	$34.80
No. 14—Body 24x2 in., tongue 16x1½ in.; marked 1/8 and 1/4 in. and Essex board measure; wt. per dozen 25 lbs.	30.00

18 in. Polished

	Per dozen
No. 18—Body 18x1½ in., tongue 12x1 in.; marked 1/16 and 1/8 in. on face; 1/12 and 1 in. on back; wt. per dozen 13 lbs.	$26.40

One-quarter dozen in a box.

STANLEY RAFTER OR FRAMING



The rafter or framing table appears on the body of the square, it is used to determine the length of common, valley, hip and jack rafters and the angle at which they must be cut to fit at the ridge and plate.

Two Foot

24x2 in. body, 16x1½ in. tongue.
Marked 1/16, 1/12, 1/10 and 1/8 in., rafter or framing, brace, octagon, Essex board measure and 100ths scale.

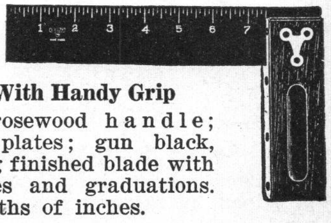
	Per dozen
No. R100—Polished	$39.00
No. R100B—Blued	45.00
No. R100C—Royal copper	54.00

Weight per dozen 25½ lbs.

One-quarter dozen in a box.

TRY SQUARES

STANLEY



No. 20—With Handy Grip

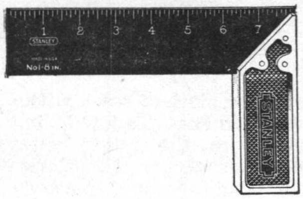
Polished rosewood handle; brass face plates; gun black, rust-resisting finished blade with white figures and graduations. Graduated 8ths of inches.

Blade, in.	6	8
Handle, in.	4½	5⅜
Wt. dozen, lbs.	4¼	6¼
Per dozen	$16.80	18.00

One-half dozen in a box.

TRY AND MITRE SQUARES

STANLEY



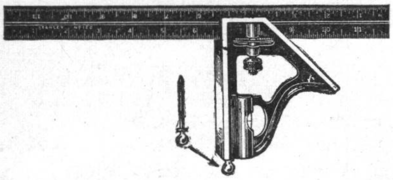
No. 1—Iron Handle, Knurled Grip

One edge of handle has an angle of 45°; japanned with sides polished. Figures and graduations stand out on gun black finish blade.

Graduated in 8ths of an inch.

Blade, in.	6	8
Handle, in.	4	5⅛
Wt. dozen, lbs.	5¾	8
Per dozen	$16.80	19.20

One-half dozen in a box.



Grooved Blade, with Level and Scriber

Gun black finish, cold rolled, tempered steel blade with white graduations and figures, edges ground smooth, square and parallel; reversible; graduated in 8ths, 16ths and 32nds of inches.

Iron head fitted with proved level glass and removable scratch awl; accurately machined working surfaces, black japanned finish.

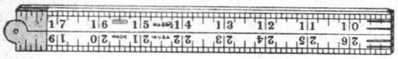
Per dozen

No. 122—12 in. blade; wt. per dozen 12 lbs. $24.00

One in a box.

BOXWOOD RULES

THREE FOOT, FOUR FOLD



Square Joint, Middle Plates

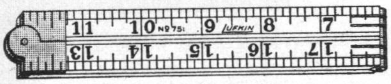
Marked 8ths and 16ths inches, large figures. Brass tips.

Per dozen

No. 66½—1 in. wide; wt. per dozen 2 lbs. $10.80

One-half dozen in a box.

TWO FOOT, FOUR FOLD



Square Joint, Middle Plates

Marked 8ths and 16ths inches. Extra prominent markings and figures make it most legible.

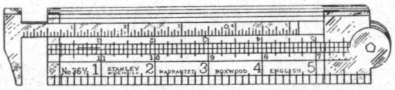
Per dozen

No. 751—1 in. wide; wt. per dozen 1½ lbs. $9.00

One-half dozen in a box.

BOXWOOD RULES

ONE FOOT, TWO FOLD



Square Joint, Right Hand Caliper

Marked 8ths, 10ths, 12ths and 16ths of inches, slide graduated 16ths and 32nds.

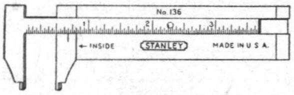
Per dozen

No. 36½R—1⅜ in. wide, wt. per dozen 1¾ lbs. $18.00

One-half dozen in a box.

POCKET CALIPER

Brass Head



Milled for inside and outside calipering.

Boxwood body graduated on the back in 16ths for 3½ in. Brass caliper slide graduated in 32nds for 3¾ in.

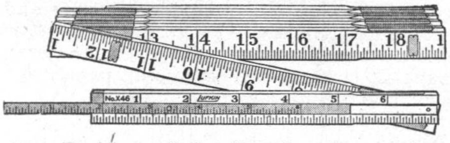
Per dozen

No. 136—4 in. long, 1⅜ in. wide; wt. per dozen 1½ lbs. $12.00

One-half dozen in a box.

FOLDING RULES

LUFKIN EXTENSION



For Inside and for Regular Measuring

A 6 in. graduated brass slide is fitted into the first section of the rule which runs in a T slot and has a stop at each end so it cannot fall out. For taking inside measurements of openings.

With strike plates, small brass plate both sides of each section, preventing wear.

Selected hardwood, brass plated spring joints with patented lock; 6 in. folds, ⅝ in. wide. Marked in 16ths on both sides.

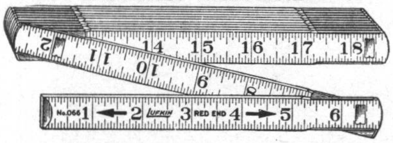
Boxwood Finish

Per dozen

No. X46—6 ft. long; wt. per dozen 4½ lbs. $24.00

One-half dozen in a box.

LUFKIN RED END



Concealed joints; flexible hardwood; 6 in. folds; ⅝ in. wide; patent strike plates; brass mountings; red enameled ends; regular markings, 16ths on both sides, both upper and lower edges. Patented lock joints reduce end play and thus greatly aid in maintaining accuracy. Brass caps at end.

White Enameled

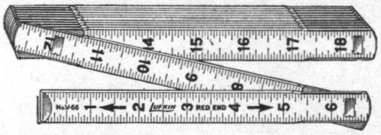
Per dozen

No. 066—6 ft. long; wt. per dozen 3½ lbs. $15.00

One-half dozen in a box.

FOLDING RULES

LUFKIN "VERTICAL" RED END



Measures upward or downward, figures face user directly. Measures left to right or right to left. Figures never upside down. Numbering commences on inside, measurement lies close to work even with rule but partly open. Brass strike plates and lock joints. Concealed joints, flexible hardwood, 6 in. folds, ⅝ in. wide.

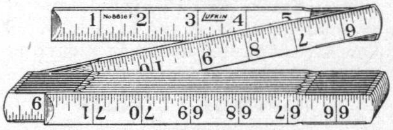
White Enameled

Per dozen

No. V66—6 ft. long; wt. per dozen 3½ lbs. $15.00

One-half dozen in a box.

LUFKIN REGULAR



Concealed joints; flexible hardwood; 6 in. folds; ⅝ in. wide, brass plated mountings. Regular markings, 16ths on both sides.

Numbering commences on inside face. Measurement lies close to the work even when rule is but partly open.

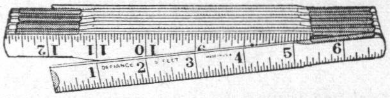
White Enameled

Per dozen

No. 8616F—6 ft. long; wt. per dozen 3 lbs. $12.00

One-half dozen in a box.

DEFIANCE "ZIG-ZAG"



Concealed joints, hardwood, steel mountings; 6 in. folds, ⅝ in. wide. Graduated in 16ths on both sides.

Yellow Enameled

Per dozen

No. 86—6 ft. long; wt. per dozen 3 lbs. $8.40

With Inside (Flat) Markings

Same as No. 86 except that numbering commences on inside face. Measurement lies close to the work.

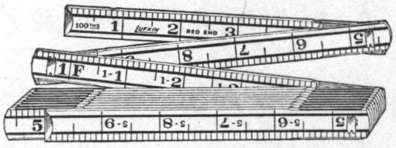
Yellow Enameled

Per dozen

No. 86F—6 ft. long; wt. per dozen 2¾ lbs. $8.40

One dozen in a box.

LUFKIN RED END, SURVEYORS



For Engineers, Surveyors and Road Builders

Concealed joints, ⅝ in. wide, 6 in. folds, flexible hardwood; solid brass mountings, patented lock joints, strike plates. Graduated feet, 10ths and 100ths of feet on inside; feet, inches and 16ths on outside. Instantaneous readings (foot numbers in red, repeated on each 10ths and each inch).

White Enameled

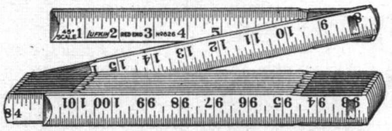
Per dozen

No. 066D—6 ft. long; wt. per dozen 3½ lbs. $18.00

One-half dozen in a box.

FOLDING RULES

LUFKIN PLUMBERS' AND STEAM FITTERS



Riveted joints; flexible hardwood, 6 in. folds, ⅝ in. wide; brass plated trimmings. Marked outside in black, 72 standard inches to 16ths; inside, red figures, 45° scale inches to 16ths. Turning from black to red gives, at a direct reading, the corresponding 45° or elbow measurement.

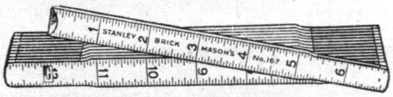
White Enameled

Per dozen

No. 626—6 ft. long; wt. per dozen 3½ lbs. $18.00

One-half dozen in a box.

STANLEY BRICK MASONS'



A compact and accurate rule for gauging the space of brick courses evenly in a given height to insure uniform thickness of mortar. Graduated in 8ths and 16ths of inches on one side and has a brick spacig scale on the other.

Flexible hardwood, stainless concealed joints, strike plates, 6 in. folds, ⅝ in. wide.

White Enameled

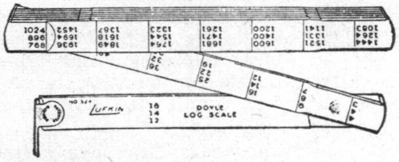
Per dozen

No. 167—6 ft. long; wt. per dozen 3 lbs. $19.20

One-half dozen in a box.

LOG RULES

LUFKIN, FOLDING



For Scaling Logs and Common Measuring

Flexible hardwood, concealed joints, brass plated mounting; 6 in. folds, ⅝ in. wide. Cream enameled.

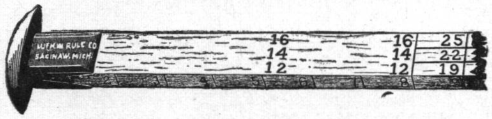
Doyle Scale, marked one side for 12, 14, 16 ft. logs, other side for 10 and 18 ft. logs, and on lower edge one row inches to 16ths for general measuring.

Per dozen

No. 524—4 ft. long; wt. per dozen 2 lbs. $12.00

One-half dozen in a box.

LUFKIN "T" HEAD


LUFKIN RULE CO SAGINAW MICH
16
14
12
16 25
14 22
12 19

Wisconsin Pattern, Decimal "C" Scale

Selected second growth white hickory, clear tough stock, air dried; steel "T" head; burnt figures; wedge type handle, nicely formed.

Regular marking 8/20 and 12/24 feet. Specify marking wanted.

Each

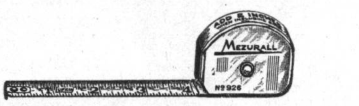
No. 22—Figured 48 in. length over all 56 in., width 1⅛ in.; wt. each ⅞ lb. $8.50

Open stock.

TAPE RULES

For inside and outside, height and depth, flexible and rigid measurements. The manually operated blade can be projected unsupported to walls, ceilings or into openings, yet will flex to measure circles, around corners, etc. closely.

LUFKIN MEZURALL



Manually Operated ½ In. Wide Blade

Nickel plated steel case, and blade with dark markings.

Adjustable end hook, allows accurate measurements, either hook or butt end. The nickel plated case is exactly two inches wide which is indicated at the top of the case and added to the tape length when taking inside measurements.

Case will stand unsupported in three measuring positions.

Blade marked on one side in 16ths on both edges and in 32nds on upper edge for 6 in.

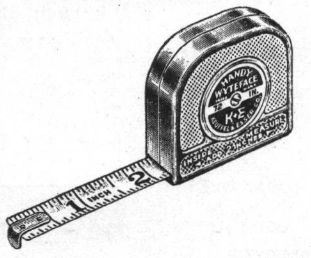
Per dozen

No. 926—6 ft. blade; wt. per dozen 2¼ lbs. $18.00

No. 928—8 ft. blade; wt. per dozen 2½ lbs. 20.40

One in a box, one-half dozen in a carton.

HANDY WYTEFACE



Manually Operated, ½ in. Wide

Black graduations on a clear white surface. Easy to read, even in poor light. Easy to clean. The crack-proof surface protects the steel from rust. For inside measurements add 2 in. to the reading at the opening in case. Nickel plated case.

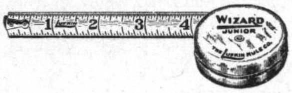
Semi-rigid like a ruler; case fits hand and pocket; can be worked with one hand; it "stays put" at any length when pulled out; graduated on both edges in inches and $\frac{1}{16}$ inch.

Per dozen

No. W7408—8 ft. blade, 2 in. case; wt. per dozen 3¼ lbs. $25.20

One in a box, one-half dozen in a carton.

LUFKIN WIZARD JUNIOR



Manually Operated, ½ in. Wide Blade

Nickel plated round steel case; nickel plated steel blade, with dark markings and solid hook.

Blade marked on one side in 16ths on both edges and in 32nds on upper edge for 6 in.

Per dozen

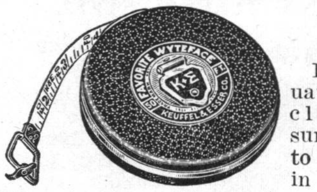
No. 1686—6 ft. blade; wt. per dozen 2¼ lbs. $12.00

No. 1688—8 ft. blade; wt. per dozen 2½ lbs. 15.00

One in a box, one-half dozen in a carton.

MEASURING TAPES

FAVORITE WYTEFACE STEEL



With End Fastener

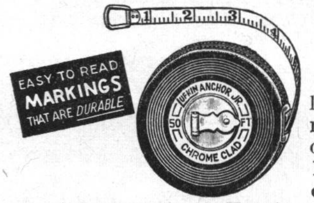
Black graduations on a clear white surface. Easy to read, even in a poor light. Easy to clean. The surface protects the steel from rust. Elimination of the etching process leaves the steel at full strength, making the line less apt to kink. Quick reading feature prevents errors.

Black leatherette case, folding self-opening handle, patent friction brake, nickel plated mountings, ⅜ in. white finish steel tape, black graduations. Marked feet, inches and 8ths; one side only.

Nos.	W7380P	W7382P	W7385P
Length, ft.	25	50	100
Wt. ea., oz.	10	16	27
Each	$6.10	7.30	12.30

One in a box.

LUFKIN ANCHOR, CHROME CLAD


EASY TO READ MARKINGS THAT ARE DURABLE
LUFKIN ANCHOR JR
CHROME CLAD
50

Instantaneous Reading

Genuine leather case, mahogany color closely hand-stitched over a substantial steel liner. Folding flush handle is opened by a push pin. ⅜ in. chrome plated steel tape with black markings easy to read even in poor light. Marked feet, inches and 8ths of inches, one side only.

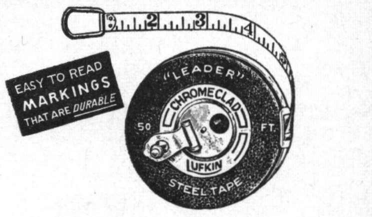
Nos.	C213	C216
Length, ft.	50	100
Wt. each, oz.	15	26
Each	$10.20	17.50

Same as above except marked feet, 10ths and 100ths of a foot.

Nos.	C213D	C216D
Length, ft.	50	100
Wt. each, oz.	15	26
Each	$10.20	17.50

One in a box.

LUFKIN LEADER, CHROME CLAD



Instantaneous Reading

Metal lined black imitation leather case; folding handle, nickel plated edge band.

⅜ in chrome plated steel tape marked feet, inches and 8ths on one side only; black permanent figures and markings.

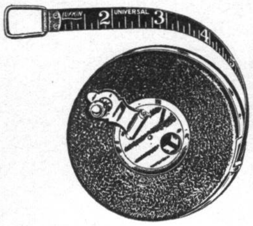
Easy to read in poor light, the satin chrome-white finish being free of glare.

Nos.	C250	C253	C256
Length, ft.	25	50	100
Wt. each, oz.	9	20	25
Each	$5.80	7.00	12.00

One in a box.

MEASURING TAPES

LUFKIN UNIVERSAL, STEEL

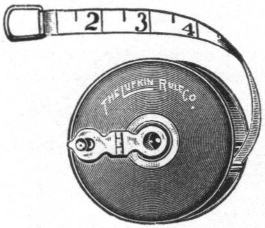


Instantaneous Reading

Black imitation leather case, folding flush handle, nickel trim, ⅜ in. "Nubian" finish steel tape, marked feet, inches and 8ths, one side only.

Nos.	543	546
Length, ft.	50	100
Wt. each, oz.	10	17
Each	$5.50	9.20

LUFKIN ASS SKIN, COTTON



Steel Case

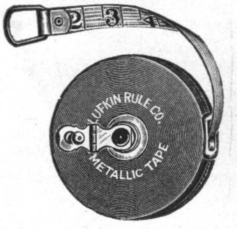
Cream enameled sides, brass edge band. Brass folding handle and mountings.

½ in. woven cotton tape, marked feet, inches and quarter inches, one side only. For ordinary work.

Nos.	710	713	716
Length, ft.	25	50	100
Wt. doz., lbs.	2¾	4	7
Per dozen	$14.40	20.40	30.00

One in a box, one-half dozen in a carton.

LUFKIN "METALLIC"



Instantaneous Reading

Metal lined brown genuine leather case, closely hand-stitched; folding flush handle; nickel plated mountings.

⅝ in. woven linen tape with metallic warp, marked feet, inches, and half-inches, one side only. With patent threader.

Nos.	503	506
Length, ft.	50	100
Wt. each, oz.	15	24
Each	$9.00	14.30

One in a box.

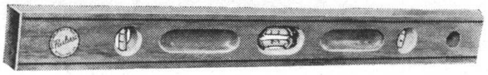
LEVELS

PEERLESS WOOD

Extra Heavy Pyrex Glass Vials

Cushioned tip to stand greater abuse. All crystals annealed and polished for protection and clear vision. Sanded on all four sides for accuracy. All wood seasoned, chemically sealed, coated and highly polished.

CARPENTERS'



California Sugar Pine, Natural Finish

With vermilion stripe beneath outer finish; metal end plates. Four vials.

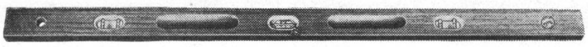
Each

No. 4—24 in. long, 2¼ in. wide, 1⅛ in. thick; wt. each 1 lb. ..$4.25

One in a box.

MASONS'

With Magna-truss lens, optic formed for quick, easy reading and superior strength.



48 in. Long

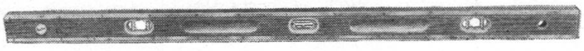
2⅜ in. wide, 1⅛ in. thick. Six vials.

Each

No. 02—Mahogany, natural finish; wt. each 2¾ lbs. $8.50

No. 03—California sugar pine, dark maroon finish; wt. each 2 lbs. 7.50

One in a box.



Mahogany, Natural Finish

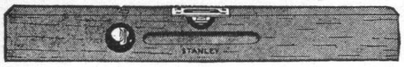
Aluminum bound; metal end plates. Six vials.

Each

No. 222—48 in. long, 2⅜ in. wide, 1⅛ in. deep; wt. each 3½ lbs. $11.50

One in a box.

STANLEY, WOOD



No. 0—Non-Adjustable

Glasses set solid in plaster.

Air seasoned cherry stock, 2¾x1$\frac{3}{16}$ in., sealed against moisture, highly polished finish, proved glasses filled with Cat's eye fluid, protected by heavy brass plates, high point marked by two heavy black lines. Sides of vial openings are painted black which concentrates the light directly on the glass.

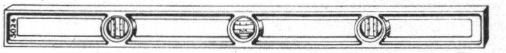
One plumb and one level.

Length, in.	24	28
Wt. each, lbs.	1⅝	2⅛
Each	$2.70	2.90

One in a box.

LEVELS

SANDS ALUMINUM, CARPENTERS'



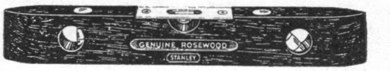
Six Glasses, Four Plumbs and Two Levels

Accurate and easy to read; aluminum will not rust, warp, split or crack like ordinary wood levels. Protected vials.

Nos.	24	28	30
Length, in.	24	28	30
Width, in.	2¼	2¼	2¼
Thickness, in.	1⅛	1⅛	1⅛
Wt. each, lbs.	2	2¼	2⅜
Each	$5.50	6.50	7.00

One in a leatherette case.

STANLEY, TORPEDO



One Level, One Plumb and One Mitre

Accurate convenient levels for mechanics, inspectors, hobbyists and householders who find them especially valuable for working in close quarters. Their tapered shape and their small size make them handy pocket levels.

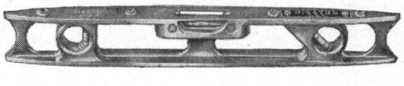
Gonzalvo Alver hardwood; highly accurate Cat's eye glasses set in plaster; metal face plates.

Each

No. 260—9 in. long, 1¼ in. wide, ¾ in. thick; wt. each $\frac{5}{16}$ lb..**$1.50**

Twelve in a box.

DISSTON FEATHERWEIGHT, POCKET



One Level and Two Plumbs

One plumb glass set at 45° angle.

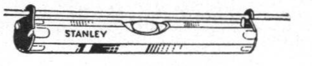
Aluminum alloy, tapers from center to ends. Natural finish base and body, polished top plate. Proved glasses.

Each

No. A11—9 in. long, 1⅜ in. wide, $\frac{9}{16}$ in. thick; wt. each 2 oz..**$1.75**

Six in a box.

STANLEY, LINE



Hexagon Aluminum Case

Guards on hooks make it difficult to shake from a line. Proved glass set solid in plaster. Flat bottom adapts it for surface leveling.

Used to determine grades, to lay foundations, brick walls, tile pipe, to work ditches, trim hedges, etc.

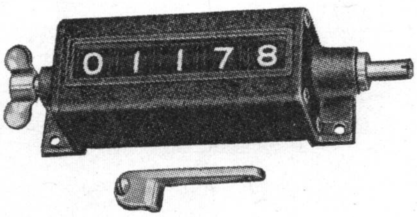
Per dozen

No. 187—3¼ in. long; wt. per dozen ⅜ lb. **$7.20**

One in a box, one-half dozen in a carton.

COUNTING DEVICES

VEEDER-ROOT MEDIUM SIZE COUNTERS



Five or Eight Figures

White figures, .270 in. high, on black. Shaft on right side only. Knob reset. Black shrivel finish case, 1 19/64 in. high, 1 15/64 in. wide. Requires no lubrication.

No. 1100—Direct Drive Type

Adds 10 counts for each revolution of shaft. Right hand counter wheel and shaft move together. Not guaranteed to subtract. Maximum recommended speed: 1000 counts per minute or 100 RPM of drive shaft.

No. of figures	5	8
Length case, in.	3 43/64	5 11/64
Wt. each, lbs.	1	1¼
Each	$16.00	20.00

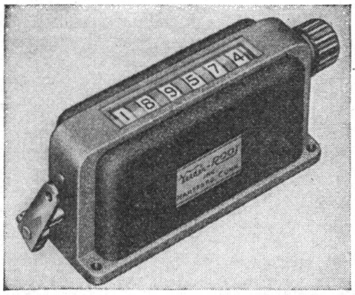
No. 1101—Revolution Type

Adds one unit for each complete revolution of shaft in one direction. Not guaranteed to subtract. Maximum speed: 500 counts per minute.

No. of figures	5	8
Length case, in.	3 43/64	5 11/64
Wt. each, lbs.	1	1¼
Each	$16.00	20.00

One in a box.

GENERAL PURPOSE COUNTERS



Rotary Ratchet Type; Six Figures

Adds one count for each 36° of shaft movement in one direction. Will accept up to 20° overtravel at each end of the stroke without registering more than one count. No count is made when shaft is turned backward or oscillated through an angle of less than 36°. Speed: 1500 counts per minute.

Black figures, .188 in. high on white. Shaft right or left. Standard reset. Two-tone gray shrivel finish. No lubrication required.

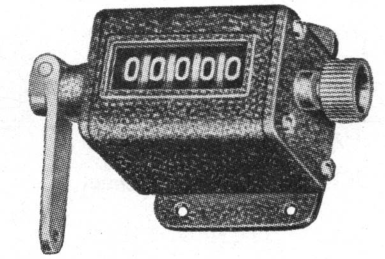
Each

No. 1260—4½ in. long, 1 9/16 in. high, 1¼ in. wide over all; wt. each ¾ lb. **$17.50**

One in a box.

COUNTING DEVICES

VEEDER-ROOT SMALL RESET COUNTERS



Ratchet Type; Five Figures

Adds one for each oscillation of the lever through an angle of 40 degrees. Made with stops which limit lever movement to 45 degrees. Must oscillate more than 36 degrees to insure correct counting. Maximum speed recommended: 500 to 1000 counts per minute, depending on installations.

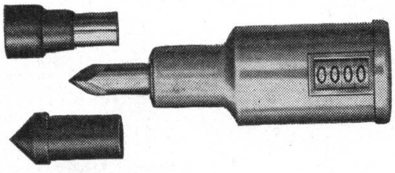
White figures, .166 in. high, on black. Right or left shaft. Knob reset; spring-to-return lever. Black shrivel finish case. No lubrication required.

Each

No. 1122—2 13/32 in. long, 1 19/64 in. high, 1 7/16 in. wide; wt. each 6 oz. ..$8.25

One in a box.

HAND-OPERATED CLUTCH SPEED COUNTERS



With Rubber Suction Cup and Pointed Rubber Tip

Press point or cup against revolving shaft and time one minute on your watch to get correct RPM. Used on engines, motors, spindles, etc.

Black figures, .166 in. high, on metal. Non-reset. No lubrication required. Satin chrome finish.

Each

No. 1021—Four figures; 3¼ in. long over all, ⅞ in. high, ⅞ in. wide; wt. each 8 oz. $5.50

One in a box.

HAND TALLIES

Single

Press thumb lever once for each unit. Count anything; when finished total can be read directly from face of counter.

White figures, .166 in. high, on black. One turn of knob resets all figures to zero. Perspiration-resistant gray baked finish. No lubrication required.

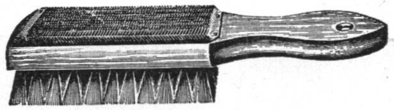
Each

No. 1023—Four figures, 1 17/64 in. wide over all, 1¼ in. deep, 2 in. high; wt. each 8 oz. $7.50

One in a box.

FILE CARDS

DELTA



Combination Card and Brush

The strong, sharp wire fibres readily remove all grit while the brush cleans the file thoroughly. Comfortable wood handle.

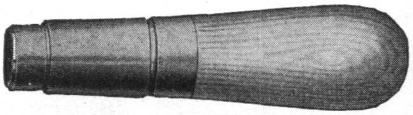
Per dozen

Delta—3¾x1½ in. card face, 9¼ in. long over all; wt. per dozen 5 lbs. **$14.40**

One dozen in a box.

FILE HANDLES

LUTZ NO-SPLIT



Long Ferrule; Will Not Split

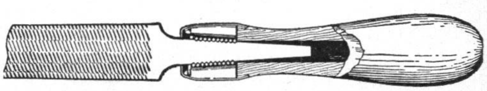
Smooth selected birchwood polished steel ferrule.

Nos.	1	2	3
Length, in.	4	4½	4⅞
For files, in.	3–6	6–8	8–12
Wt. dozen, lbs.	1	1⅓	1⅞
Per dozen	**$2.20**	**2.30**	**2.70**

Nos.	4	5
Length, in.	5½	6
For files, in.	12–16	16–20
Wt. dozen, lbs.	2½	3⅜
Per dozen	**$3.20**	**3.30**

Three dozen in a box.

HYRO SHUR-GRIP



Screws On and Stays On

Hardwood, heavy steel ferrule. A hardened flexible steel die locked in handle cuts a thread on the tang of the file as it is screwed on. It can't come off unless unscrewed.

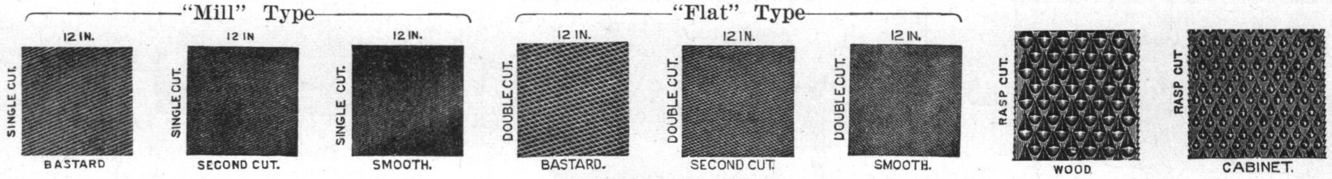
Nos.	2	3
For file, in.	3–6	6–10
Length, in.	4	4½
Wt. dozen, lbs.	1	1½
Per dozen	**$2.70**	**2.70**

Nos.	4	5
For file, in.	10–14	14–18
Length, in.	5	5½
Wt. dozen, lbs.	2	2½
Per dozen	**$3.60**	**4.50**

One dozen in a box.

PRICE LIST OF FILES AND RASPS

Illustrations Showing the Different "Cuts" in General Use



List Prices Per Dozen

INDUSTRIAL FILES

Flat

Lgth., in.	4	6	7	8	10	12	14	16	18
Bastard	$5.00	5.80	.....	7.20	9.50	13.10	18.00	24.00	32.30
2nd Cut	5.80	6.50	.....	8.20	10.90	14.90	20.70	27.20	.....
Smooth	6.40	7.20	.....	8.90	11.80	16.30	22.60	30.10	.....

Hand

Bastard	....	5.80	.....	7.30	10.10	14.50	20.30	27.20	.....
2nd Cut	....	6.90	.....	8.50	11.80	16.60	23.00	.....	.....
Smooth	....	7.60	.....	9.00	12.70	18.20	24.60	.....	.....

Half Round

Bastard	6.50	8.20	.....	10.10	12.30	15.90	20.90	27.80	.....
2nd Cut	7.60	9.10	.....	11.20	13.60	17.60	23.00	30.40	.....
Smooth	8.20	9.60	.....	12.00	14.50	18.80	24.70	32.70	.....

Square

Bastard	5.10	6.20	.....	7.40	10.00	13.80	18.80	25.30	33.90
2nd Cut	6.20	6.90	.....	8.50	11.50	15.50	21.70	.....	.....
Smooth	6.60	7.40	.....	9.50	12.30	17.30	23.60	.....	.....

Round

Bastard	4.10	4.70	5.30	5.80	7.60	10.10	14.50	19.90	.....
2nd Cut	4.70	5.40	.....	6.60	8.60	11.60	16.50	.....	.....
Smooth	5.30	6.10	.....	7.30	9.50	12.70	17.70	.....	.....

Warding

Bastard	5.40	6.60	.....	8.60	11.80	.....	.....	.....	.....
2nd Cut	6.50	8.00	.....	10.10	13.60	.....	.....	.....	.....
Smooth	7.30	8.60	.....	11.10	14.90	.....	.....	.....	.....

Knife

Bastard	7.30	9.30	.....	11.50	13.60	.....	.....	.....	.....
2nd Cut	8.20	10.10	.....	12.30	15.50	.....	.....	.....	.....
Smooth	8.60	10.70	.....	12.80	16.60	.....	.....	.....	.....

Velvo Finisher

Length, in.	6	8	10	12	14	16
Flexible	$....	.....	.....	.....	42.80	.....
Tanged	....	.....	.....	.....	42.80	.....

Zipper

Lgth., in.	6	8	10	12	14	16
Blade Only	$.....	.....	.....	.....	81.00	.....
Handle Only	.....	.....	.....	.....	64.80	.....

Aluminum

Flat	7.20	9.50	11.50	14.90	19.60	.....
Half Round	14.20	16.20	18.20	21.60	27.00	.....

Bisca

Flat	.....	.....	10.50	14.50	19.50	27.20
Square	.....	.....	.....	16.90	22.80	30.40

Brass

Flat	.....	9.50	11.50	14.90	.....	.....
Half Round	.....	16.20	18.20	21.60	.....	.....

Lead Float or Babbitt

Flat	.....	8.50	11.60	15.90	.....	.....
Half Round	.....	11.50	14.50	19.00	.....	.....

Foundry

Flat	.....	7.20	9.50	13.10	18.00	.....
Half Round	.....	10.10	12.30	15.90	20.90	.....

Lathe

Long Angle	.....	.....	11.60	15.90	21.60	.....

Wood Rasps

Flat						
Bastard	.....	12.70	17.30	23.60	31.30	41.60
Smooth	.....	17.30	23.60	31.30	41.60	55.20
Half Round						
Bastard	10.90	13.60	18.50	25.30	33.50	44.40
Smooth	13.60	18.50	25.30	33.50	44.40	58.90
Cabinet						
2nd Cut	13.60	17.30	23.60	30.80	40.00	.....
Smooth	15.80	20.90	28.00	36.20	45.80	.....

SAW FILES

Taper

Lgth., in.	4	4½	5	5½	6	7	8	9	10
	$....	....	....	....	4.60	5.80	7.30	....	10.90

Slim Taper

	3.00	3.10	3.40	....	4.20	5.10	6.10	....	8.60

Extra Slim Taper

	3.00	3.10	3.40	3.90	4.20	5.10	6.10	....	....

Double Extra Slim

	3.00	3.10	3.40	....	4.20	5.10	6.10	....	....

Blunt Handsaw

Slim	....	....	....	....	5.10	....	....	....	....
Ex. Slim	....	....	....	5.10	6.10	7.30	....	....	....

Blunt Bandsaw

Lgth., in.	4	4½	5	5½	6	7	8	9	10
Regular	....	....	....	....	6.40	....	9.10	....	....
Slim	....	....	....	....	5.30	....	7.20	....	....

Mill

Lgth., in.	4	6	7	8	10	12	14	16
Bastard	$4.10	4.70	5.30	5.80	7.60	10.10	14.50	19.90
2nd Cut	....	5.40	....	6.60	8.60	11.60	16.50	.....
Smooth	....	6.10	....	7.30	9.50	12.70	17.70	.....

Cross Cut

....	....	....	....	10.10	12.30	.....	....	.....

Cant Saw

....	....	7.30	....	8.60	11.80	.....	....	.....

Standard Packages—All files up to and including 10 in., one dozen to box; 12 in. and larger one-half dozen to box.

FILES

DELTA—Highest Grade File Made

Precision Plus—Not made by mass production methods.

Uniform Quality—From the modern plant with latest scientific devices.

Unseen Details—Depth of bite—very sharp teeth, are **Milled, not Stamped**—uniform height and contour.

CUTS—

Single Cut Files—Have a series of parallel cuts or teeth equally spaced. Widely used for fine smooth finishing.

Double Cut Files—Have a second series of parallel cuts made on top of and at an angle to the first cuts. Used for hogging or rapid removal of metal.

TYPES—

"Mill" Files—Most commonly used **"Single Cut,"** for smooth, fine finish.

"Flat" Files—The standard **"Double Cut,"** for rapid removal of metal.

"Hand" Files—"Double Cut" and parallel in width, for "close to the shoulder" filing. One edge cut, the other edge safe (uncut).

Coarseness—Actual file coarseness depends on the file length, for as the size of a file increases the coarseness also increases.

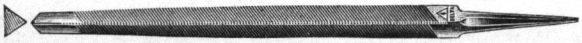
Bastard Cut—For hogging or rapid removal of metal.

Second Cut—For intermediate finishing and cutting tough alloy.

Smooth Cut—For fine, smooth finishing.

REGULAR TAPER

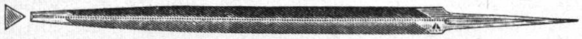
Single Cut—For filing hand and buck saws and for general purposes.



Length, in.	6	8	10
Width sides, in.	½	⅝	¾
Teeth per in.	42	39	34
Wt. dozen, lbs.	2	4¼	7½
Delta—Per dozen	$4.60	7.30	10.90

SLIM TAPER

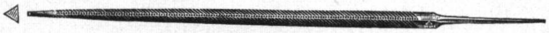
Single Cut—For filing hand, rip and wood saws. This file has largely superseded the regular taper owing to its greater sweep or stroke.



Length, in.	4	4½	5	6	7	8	10
Width sides, in.	¼	¼	5/16	⅜	13/32	½	19/32
Teeth per in.	60	57	56	52	47	43	39
Wt. dozen, lbs.	5/16	7/16	9/16	15/16	1 11/16	2 11/16	4⅞
Delta—Per dozen	$3.00	3.10	3.40	4.20	5.10	6.10	8.60

EXTRA SLIM TAPER

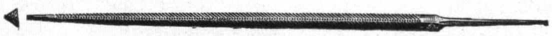
Single Cut—For sharpening fine hand saws and back saws.



Length, in.	4	5	5½	6	7
Width sides, in.	3/16	7/32	¼	9/32	11/32
Teeth per in.	64	61	60	58	53
Wt. dozen, lbs.	¼	7/16	9/16	11/16	1⅛
Delta—Per dozen	$3.00	3.40	3.90	4.20	5.10

DOUBLE EXTRA SLIM TAPER

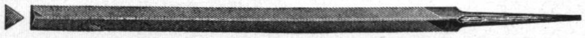
Single Cut—For filing panel, back, butcher, scroll and other fine tooth thin edge saws.



Length, in.	4	5	6	7
Width sides, in.	5/32	3/16	7/32	¼
Teeth per in.	70	66	62	56
Wt. dozen, lbs.	3/16	5/16	7/16	11/16
Delta—Per dozen	$3.00	3.40	4.20	5.10

SLIM BLUNT BAND SAW

Single Cut—For filing band saws with well rounded gullets. Has heavy rounded cut edges.

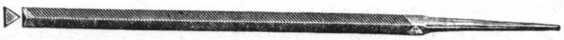


Length, in.	8
Width sides, in.	½
Teeth per in.	43
Wt. dozen, lbs.	3⅛
Delta—Per dozen	$7.20

All above, one dozen in a box.

HAND SAW BLUNT EXTRA SLIM

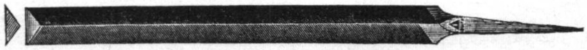
Single Cut—For sharpening hand saws with 60° angle teeth. They are parallel in width and thickness.



Length, in.	6	7
Width sides, in.	9/32	11/32
Teeth per in.	58	53
Wt. dozen, lbs.	⅞	1⅜
Delta—Per dozen	$6.10	7.30

CANT OR LIGHTNING SAW

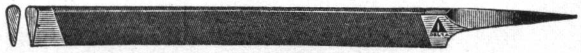
Single Cut—On all three sides; two edges cut. A special three-sided shape used for sharpening certain types of cross cut, circular and buck saws.



Length, in.	6	8	10
Width, in.	17/32	11/16	13/16
Thickness, in.	13/64	17/64	5/16
Teeth per in.	52	46	41
Wt. dozen, lbs.	1 5/16	2 13/16	5⅜
Delta—Per dozen	$7.30	8.60	11.80

GREAT AMERICAN CROSS CUT SAW

Single Cut—Designed for filing Great American cross cut saws. The rounded back is cut for filing gullets.

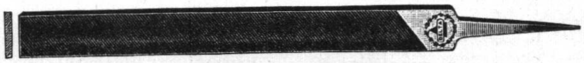


Length, in.	10
Width, in.	13/16
Thickness, in.	23/64
Teeth per in.	41
Wt. dozen, lbs.	6
Delta—Per dozen	$12.30

All above, one dozen in a box.

LONG ANGLE PARALLEL LATHE

Single Cut—Edges left safe. Made on a heavy blank to minimize springing in use. Uniform in width and thickness throughout its length, making it particularly efficient for filing.



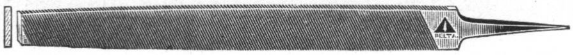
Length, in.	12	14
Width, in.	1 3/16	1⅜
Thickness, in.	17/64	19/64
Teeth per in.	22	29
Wt. dozen, lbs.	11½	18½
Delta—Per dozen	$15.90	21.60

One-half dozen in a box.

FILES

MILL

Single Cut—Originally made for filing mill saws. Widely used in machine shops also, due to its smooth shearing action. Made with two square edges. Both edges are cut.



MILL BASTARD

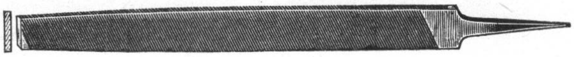
Length, in.	4	6	8	10	12	14	16
Width, in.	7/16	⅝	13/16	1	1 3/16	1⅜	1 17/32
Thickness, in.	5/64	⅛	5/32	3/16	7/32	¼	9/32
Teeth per in.	58	50	44	39	35	31	27
Wt. dozen, lbs.	⅜	1 3/16	2 11/16	5¼	9 1/16	13⅛	20⅝
Delta—Per dozen	$4.10	4.70	5.80	7.60	10.10	14.50	19.90

MILL SECOND CUT

Length, in.	10	12	14
Width, in.	1	1 3/16	1⅜
Thickness, in.	3/16	7/32	¼
Teeth per in.	45	40	35
Wt. dozen, lbs.	5¼	9 1/16	13⅛
Delta—Per dozen	$8.60	11.60	16.50

MILL SMOOTH

Length, in.	6	8	10	12	14
Width, in.	⅝	13/16	1	1 3/16	1⅜
Thickness, in.	7/64	5/32	3/16	7/32	¼
Teeth per in.	71	59	53	47	41
Wt. dozen, lbs.	1 3/16	2 11/16	5¼	9 1/16	13⅛
Delta—Per dozen	$6.10	7.30	9.50	12.70	17.70



"FRANKFORD" MILL BASTARD
Second Quality

For miners to carry underground for sharpening their tools.

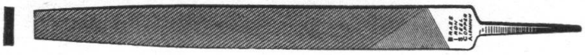
Length, in.	10
Width, in.	1
Thickness, in.	3/16
Teeth per in.	39
Wt. dozen, lbs.	5¼
Frankford—Per dozen	$7.60

BISCA—ALL PURPOSE
Fast Cutting, Smooth Finish

Brass
Iron
Steel
Copper
Aluminum

Cuts with equal efficiency whether the metal is Brass, Iron, Steel, Copper or Aluminum alloys and has longer life than bastard cut files in many operations.

Performs a dual function. The scientifically designed teeth remove metal like a double cut file and at the same time leave a smooth finish. It was developed to meet a special need in industry where an "all around" file would speed production economically.



FLAT BISCA

Length, in.	10	12	14	16
Width, in.	1	1 3/16	1⅜	1 17/32
Thickness, in.	¼	17/64	19/64	11/32
Wt. dozen, lbs.	7	10¼	15½	23½
Delta—Per dozen	$10.50	14.50	19.50	27.20

SQUARE BISCA

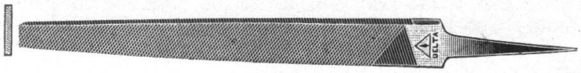
Length, in.	12	14	16
Square, in.	½	⅝	¾
Wt. dozen, lbs.	8	14½	24
Delta—Per dozen	$16.90	22.80	30.40

All above, 4 to 10 in., one dozen; balance, one-half dozen in a box.

FILES

FLAT

Double Cut—The most commonly used double cut file. The rectangular cross section tapers toward the point, both in width and thickness. Both edges are cut. For hogging or rapid removal of metal.



FLAT BASTARD

Length, in.	6	8	10	12	14	16
Width, in.	⅝	13/16	1	1 3/16	1⅜	1 17/32
Thickness, in.	5/32	7/32	¼	17/64	19/64	11/32
Teeth per in.	32	25	22	18	17	15
Wt. dozen, lbs.	1⅝	3⅝	7	11⅝	18½	27⅛
Delta—Per dozen	$5.80	7.20	9.50	13.10	18.00	24.00

FLAT SECOND CUT

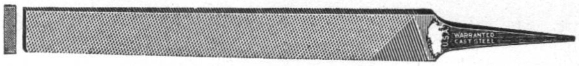
Length, in.	10	12
Width, in.	1	1 3/16
Thickness, in.	¼	17/64
Teeth per in.	30	27
Wt. dozen, lbs.	7	11⅝
Delta—Per dozen	$10.90	14.90

FLAT SMOOTH

Length, in.	6	8	10	12	14	16
Width, in.	⅝	13/16	1	1 3/16	1⅜	1 17/32
Thickness, in.	5/32	7/32	¼	17/64	19/64	11/32
Teeth per in.	54	46	40	35	31	30
Wt. dozen, lbs.	1⅝	3⅝	7	11⅝	18½	27⅛
Delta—Per dozen	$7.20	8.90	11.80	16.30	20.70	27.20

HAND

Double Cut—Parallel in width but tapered in thickness. With one cut edge, the other being left safe (uncut). Particularly useful when filing close to the shoulder.



HAND BASTARD

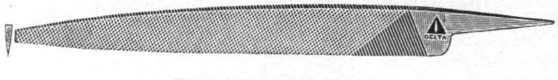
Length, in.	6	8	10	12
Width, in.	23/32	29/32	1 3/32	1 17/64
Thickness, in.	3/16	7/32	9/32	5/16
Teeth per in.	32	25	22	18
Wt. dozen, lbs.	2¼	4 11/16	8⅞	14 5/16
Delta—Per dozen	$5.80	7.30	10.10	14.50

HAND SMOOTH

Length, in.	6	8	10	12
Width, in.	23/32	29/32	1 3/32	1 17/64
Thickness, in.	3/16	7/32	9/32	5/16
Teeth per in.	54	46	40	35
Wt. dozen, lbs.	2¼	4 11/16	8⅞	14 5/16
Delta—Per dozen	$7.60	9.00	12.70	18.20

KNIFE

Double Cut—So named from resemblance to a knife blade. Double cut both sides, single cut on edge. Particularly suited on work having acute angles.



KNIFE BASTARD

Length, in.	4	6	8
Width, in.	15/32	11/16	⅞
Thickness, in.	7/64	5/32	3/16
Teeth per in.	52	43	35
Wt. dozen, lbs.	½	1	2 3/16
Delta—Per dozen	$7.30	9.30	11.50

KNIFE SMOOTH

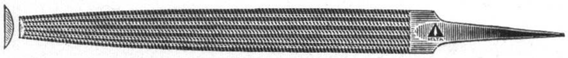
Length, in.	4	6	8
Width, in.	15/32	11/16	⅞
Thickness, in.	7/64	5/32	3/16
Teeth per in.	86	69	57
Wt. dozen, lbs.	½	1	2 3/16
Delta—Per dozen	$8.60	10.70	12.80

All above, 4 to 10 in., one dozen; balance, one-half dozen in a box.

FILES

HALF ROUND

Double Cut—The flat sides of all half round files are double cut. The backs (convex sides) are double cut in all sizes of bastard pattern; the second cut pattern is double cut 8 in. and up; the backs of smaller second cut and all smooth files are single cut. The edges of bastard pattern 10 in. and longer are cut, the edges of all others are left sharp. Used in general machine shop work, the flat side for general purpose and the convex side in preparing and sharpening concave work.



HALF ROUND BASTARD

Length, in.	6	8	10	12	14	16
Width, in.	⅝	¾	15/16	1⅛	1 5/16	1½
Thickness, in.	5/32	7/32	9/32	11/32	13/32	29/64
Teeth per in.	32	25	22	18	17	15
Wt. dozen, lbs.	¾	1¾	3¼	6¾	12	19½
Delta—Per dozen	$8.20	10.10	12.30	15.90	20.90	27.80

HALF ROUND SECOND CUT

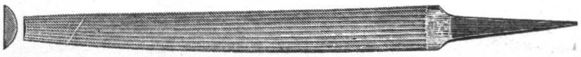
Length, in.	6	8	10	12
Width, in.	⅝	¾	15/16	1⅛
Thickness, in.	5/32	7/32	9/32	11/32
Teeth per in.	43	35	30	27
Wt. dozen, lbs.	¾	1¾	3¼	6¾
Delta—Per dozen	$9.10	11.20	13.60	17.60

HALF ROUND SMOOTH

Length, in.	6	8	10	12	14
Width, in.	⅝	¾	15/16	1⅛	1 5/16
Thickness, in.	5/32	7/32	9/32	11/32	13/32
Teeth per in.	54	46	40	35	31
Wt. dozen, lbs.	1 7/16	3⅛	5⅞	9⅞	16
Delta—Per dozen	$9.60	12.00	14.50	18.80	24.70

HALF ROUND WOOD

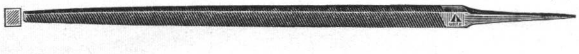
Double Cut—A coarse file used principally by woodworkers. Edges are cut.



Length, in.	8	10	12
Width, in.	13/16	1	1 3/16
Thickness, in.	15/64	9/32	11/32
Teeth per in.	20	16	14
Wt. dozen, lbs.	3¼	5⅞	10
Delta—Per dozen	$10.10	12.30	15.90

SQUARE BASTARD

Double Cut—Cut on all four sides. For enlarging square or rectangular shape apertures.



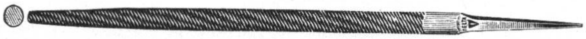
Length, in.	4	6	8	10
Diam., in.	3/16	¼	5/16	⅜
Teeth per in.	45	35	27	23
Wt. dozen, lbs.	¼	⅞	2	3⅞
Delta—Per dozen	$5.10	6.20	7.40	10.00

Length, in.	12	14	16	18
Diam., in.	½	⅝	¾	⅞
Teeth per in.	20	17	16	15
Wt. dozen, lbs.	8½	15	25	39
Delta—Per dozen	$13.80	18.80	25.30	33.90

FILES

ROUND

Double Cut—In bastard pattern 6 in. and longer, and in second cut pattern 12 in. and longer, all others single cut. For enlarging round holes and shaping internal angles.



ROUND BASTARD

Length, in.	4	6	8	10	12	14	16
Diam., in.	3/16	¼	5/16	⅜	½	⅝	¾
Teeth per in.	40	28	23	20	18	17	16
Wt. dozen, lbs.	¼	¾	1¾	3¼	6¾	12	19½
Delta—Per dozen	$4.10	4.70	5.80	7.60	10.10	14.50	19.90

ROUND SECOND CUT

Length, in.	8	10	12
Diam., in.	5/16	⅜	½
Teeth per in.	30	28	24
Wt. dozen, lbs.	1¾	3¼	6¾
Delta—Per dozen	$6.60	8.60	11.60

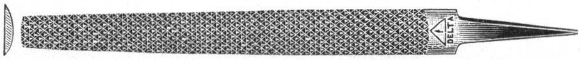
ROUND SMOOTH

Length, in.	4	6	8	10	12
Diam., in.	3/16	¼	5/16	⅜	½
Teeth per in.	62	48	41	37	33
Wt. dozen, lbs.	¼	¾	1¾	3¼	6¾
Delta—Per dozen	$5.30	6.10	7.30	9.50	12.70

RASPS

HALF ROUND CABINET

Rasp Cut—On flat and convex sides, file cut on edges. The cabinet shape is a modified half round.



CABINET SECOND CUT

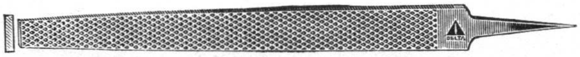
Length, in.	10	12
Width, in.	1⅛	1 5/16
Thickness, in.	9/32	11/32
Teeth per in.	6⅔	6⅔
Wt. dozen, lbs.	4⅞	8⅜
Delta—Per dozen	$23.60	30.80

CABINET SMOOTH

Length, in.	10	12
Width, in.	1⅛	1 5/16
Thickness, in.	9/32	11/32
Teeth per in.	10	10
Wt. dozen, lbs.	4⅞	8⅜
Delta—Per dozen	$28.00	36.20

FLAT WOOD, BASTARD

Rasp Cut—On flat sides. File cut on edges. Same shape as flat file.

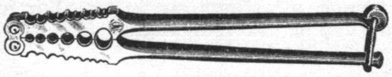


Length, in.	12	14
Width, in.	1 3/16	1⅜
Thickness, in.	13/32	15/32
Teeth per in.	5¼	4¾
Wt. dozen, lbs.	11⅝	18¾
Delta—Per dozen	$23.60	31.30

All above, 4 to 10 in., one dozen; balance, one-half dozen in a box.

WIRE AND SLEEVE CLAMPS

KLEIN'S COMBINATION



For General Line Work

Hammer forged from high grade tool steel; spring tempered; polished head and black handles.

Five round holes for twisting bare wire, one oval hole for guy strand .437x.624.

For copper wire Nos. 4, 6, 8, 10, 12 B.&S.

For iron wire Nos. 6, 8, 10, 12, 14 B.W.G.

Reverse side has five double chambers for twisting sleeves.

For copper sleeves Nos. 6, 8, 10, 12, 14, 17 B.&S.

For iron sleeves Nos. 8, 10, 12, 14, 16, 19 B.W.G.

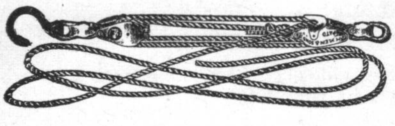
Each

No. 132-15—11¼ in. long; wt. each 1½ lbs. $7.90

Six in a box.

LINEMEN'S BLOCK-TACKLES

KLEIN'S SELF-LOCKING



Galvanized Steel Blocks

Snubbing hook locks load in any position. To lock load simply pull the luff rope under the hook; readily released. Spring guard snap hooks. Best quality rope, drop forged steel anchor hook.

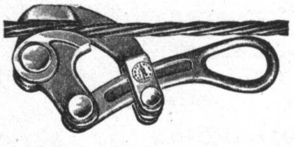
Each

No. 1802-30—Complete with 25 ft. of ⅜ in. rope and detachable hook; wt. each 3 lbs. $7.20

Open stock.

WIRE GRIPS

KLEIN "HAVEN'S"



Drop Forged Steel, Galvanized

Pear shaped eye, 1⅛x⅞ in. Roller fitted to body yoke makes the motion free and allows load to come on smoothly.

Will not slip due to hand cut serrations in the face of the eccentric.

Each

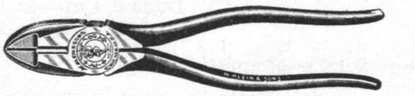
No. 1604-10—For No. 4 wire and smaller; wt. each 1 lb. $4.15

No. 1604-20—For ½ in. wire and smaller; wt. each 2⅜ lbs. 6.00

One in a box.

PLIERS

KLEIN LINEMEN'S



Side Cutting

Forged tool steel, polished head, tempered blued handles. For use on bare and insulated wire.

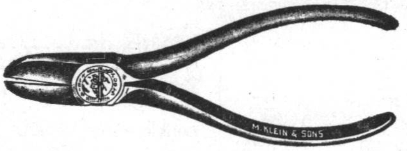
Round nose permits easier working in confined spaces and all edges are rounded to prevent nicking of wire.

Nos.	201–6NE	201–7NE
Length, in.	6	7
Wt. each, lb.	7/16	⅝
Each	$4.90	5.25

Nos.	201–8NE	201–9NE
Length, in.	8	9
Wt. each, lbs.	¾	1⅛
Each	$6.00	6.40

Six in a box.

KLEIN OBLIQUE CUTTING



Lap Joint

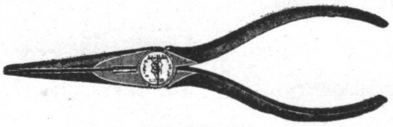
Forged tool steel, carefully hardened and tempered; polished head; temper-blued handles.

Cuts close, the narrow head permitting its use in confined places.

Nos.	202–5	202–6
Length, in.	5	6
Wt. each, lb.	5/16	⅜
Each	$4.15	4.25

Six in a box.

KLEIN LONG NOSE



Side Cutting

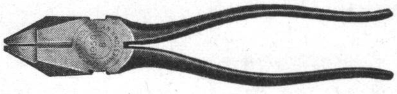
Forged tool steel, hardened and tempered; polished head; temper-blued handles.

Special features are its adaptability to stripping ends of insulated wire and the extra long reach of the jaws.

Nos.	203–5	203–6
Length, in.	5	6
Wt. each, lb.	¼	5/16
Each	$4.15	4.50

Six in a box.

CRESTOLOY LINEMEN'S



Side Cutting

Forged Crestoloy steel; polished head; gunmetal finish handles; individually tested.

They have sharp milled teeth for gripping wire and the handles are shaped to fit the hand comfortably.

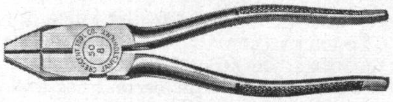
Per dozen

No. 1950—7 in. long; wt. per dozen 7½ lbs. $37.26

One in a box.

PLIERS

CRESCENT SIDE CUTTING

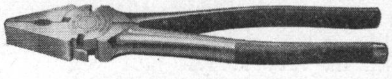


No. 50—Forged Steel

Keen edged cutters; spring tempered handles; full polished finish. Knurled grips.

Length, in.	6	7	8
Wt. doz., lbs.	5¼	7½	10½
Per dozen	$26.82	30.78	35.10

CRESCENT BUTTONS' COMBINATION



Improved Pattern

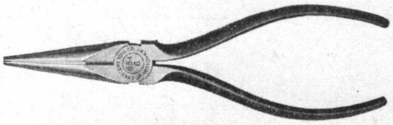
Forged steel, tempered and tested, full polished finish, knurled grip.

Flat nose style, with three Buttons' cutters, pipe grip and teeth in extreme tip of nose.

Per dozen

No. 1000—8 in. long; wt. per dozen 9 lbs. $15.38

CRESTOLOY LONG NOSE



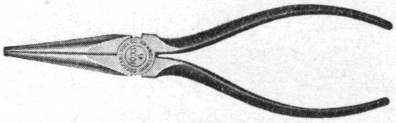
Side Cutting

Forged Crestoloy steel; polished head; gun metal handles.

Long nose reaches into tight places; cutter will cut any wire used in radio work.

Per dozen

No. 654—6 in. size, 6⅝ in. long over all, 2 3/16 in. nose; wt. per dozen 3¾ lbs. $30.96



Scored Jaws

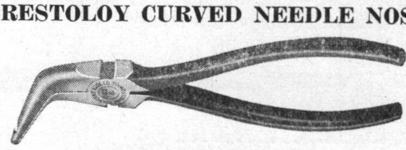
Forged Crestoloy steel; polished head; gunmetal handles.

Radio and telephone workers will appreciate this tool. Loops and bends of all sizes can be made with it.

Per dozen

No. 1033—6 in. size, 6⅝ in. long over all, 2¼ in. nose; wt. per dozen 3¾ lbs. $23.94

CRESTOLOY CURVED NEEDLE NOSE



Forged Crestoloy Steel

Long thin nose, bent at an angle, handy for working on machines in out of way corners. Carefully tempered, jaws will not break off, even though sprung or twisted out of shape. Always return to normal when pressure is released.

Polished head, gunmetal handles.

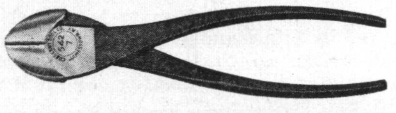
Per dozen

No. 888—6 in. long; wt. per dozen 4½ lbs. $31.86

All above, one in a box.

PLIERS

CRESTOLOY DIAGONAL CUTTING



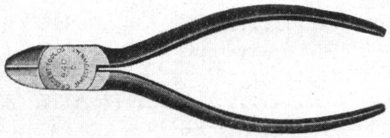
Heavy Duty

Forged Crestoloy steel; polished; gunmetal handles; keen and strong edges; individually tested.

This is one of the most powerful cutting pliers made, will cut BX armored cable.

Per dozen

No. 542—7 in. long; wt. per dozen 6 lbs. $28.98

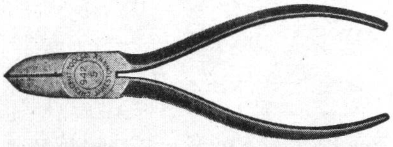


Short Nose Pattern

Forged Crestoloy steel, gunmetal finish, polished head. Have short stubby nose for close work.

Per dozen

No. 940—6 in. long; wt. per dozen 4 lbs. $33.66

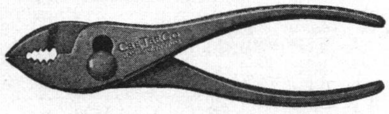


No. 942—Forged Crestoloy Steel

Polished head, gunmetal finished handles. Keen blades cut easily and cleanly.

Length, in.	5	6
Wt. dozen, lbs.	3	4½
Per dozen	$26.82	31.68

CEE-TEE-CO COMBINATION



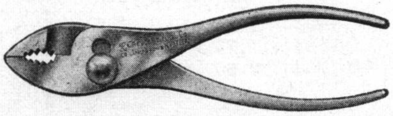
Slip Joint, Wire Cutter

Forged steel, nickel plated; checkered handles.

Carefully machined, hardened and oil tempered.

Nos.	**H-25**	**H-26**	**H-28**	**H-210**
Length, in. ...	5	6	8	10
Capacity, in. .	¾	1	1¼	1½
Wt. doz., lbs. .	2¾	6	7½	12
Per dozen	$7.38	7.38	10.62	14.94

CRESCENT MOTOR KIT COMBINATION



Slip Joint, Wire Cutter

Forged steel, nickel plated, hand buffed; checkered handles. Case hardened bolt and nut.

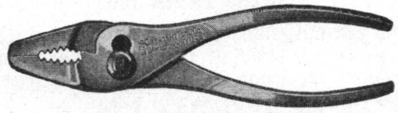
A high grade, hand finished tool, accurately machined and hardened.

Nos.	**G-26**	**G-28**	**G-210**
Length, in.	6	8	10
Cap., in.	1	1¼	1½
Wt. doz., lbs. ..	6	7½	12
Per dozen	$10.80	14.94	21.42

All above, one in a box.

PLIERS

CRESCENT THIN STRAIGHT NOSE, COMBINATION



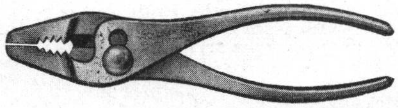
Slip Joint, Wire Cutter

Forged steel, nickel plated, hand buffed; checkered handles. Case hardened bolt and nut.

Will reach and grip objects where the ordinary plier will not. Sharp, strong teeth give a good grip.

Nos.	**L-25**	**L-26**	**L-28**	**L-210**
Lgth., in. ..	5	6	8	10
Cap., in. ...	¾	1	1¼	1½
Wt. doz., lbs.	2¼	3¾	6¾	12
Per dozen ..	$12.06	12.06	15.66	21.42

One in a box.



Side Cutting

Forged steel, nickel plated, hand buffed; checkered handles. Thin nose.

The cutter has keen edges and will cut easily.

Per dozen

No. LS-26—6 in. long, capacity 1 in.; wt. per dozen 3¾ lbs. $18.54

One in a box.

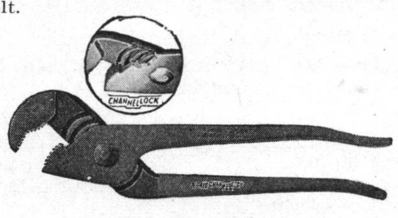
CHANNELLOCK SELF-GRIPPING

Forged from High Grade Steel

Properly heat treated; polished.

New design provides a quick, positive grip when pressure is applied to only one handle. The greater the pressure the tighter the grip.

The exclusive tongue and groove "channellock" joint provides greater strength longer wearing, closely spaced adjustments, self cleaning, visible adjustment, no wear on joint bolt.



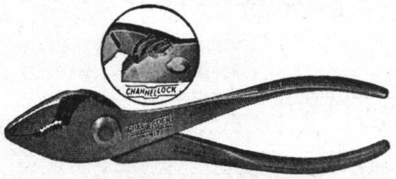
Gripping Pliers

Heavy duty. Four adjustments.

Per dozen

No. 410—9½ in. long, capacity $\frac{3}{16}$ to 1⅛ in.; wt. per dozen 12½ lbs. $38.40

One-half dozen in a box.



General Utility Pliers

Has gripping power many times greater than ordinary slip joint pliers. Three adjustments. Knurled handles.

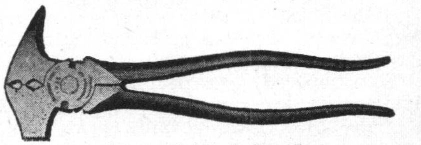
Per dozen

No. 417—7 in. long, capacity ⅞ in.; wt. per dozen 6¾ lbs. $27.60

One-half dozen in a box.

PLIERS

CRESCENT FENCE TOOL



Forged Tool Steel

Heavy prong on head gets in behind rusty staples and pulls them easily; corrugated hammer head; two wire cutters; two staple grips in nose; wire grip between handles for stretching wire.

Grip between handles holds wire tightly while leverage is exerted against post to stretch wire tight before fastening. When necessary, both wire and staple can be gripped together by special opening in head of tool. This grip, with leverage against prong will pull staples that resist ordinary methods.

Polished head, gun metal finish handles.

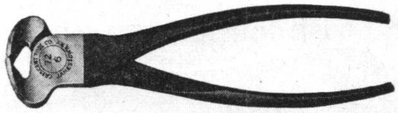
Per dozen

No. 1936—10½ in. long, cutter capacity $\frac{7}{32}$ (.2187) in.; wt. per dozen 1½ lbs. $33.66

One in a box.

NIPPERS

CRESTOLOY



No. 72—End Cutting

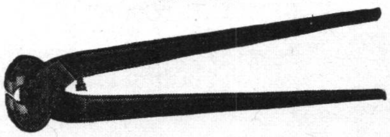
Forged Crestoloy steel; polished head; gunmetal handles; individually tested.

The width of the blade, the clearance in the throat, the leverage ratio of handle to blade, the size of the rivet, the sharpening of the blades, and the angle at which they meet, are points that have all been carefully worked out.

Length, in.	6	7
Wdt. of cutting edge, in.	$1\frac{1}{16}$	$1\frac{5}{32}$
Wt. per dozen, lbs.	6¾	9
Per dozen	$28.98	33.66

One in a box.

CAREW



With Removable Jaws

Drop forged, high grade steel handles. Natural finish. High carbon tool steel blades. Heat treated and hardened. Easily removed for regrinding. Adjusting stop screw keeps edges of cutting blades from destructive contact.

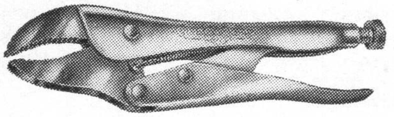
Length, in.	12
Wt. each, lbs.	2½
Each	$7.20
Extra Jaws—Per pair	1.90

WRENCHES

THIN-NOSE VISE-GRIP ADJUSTABLE

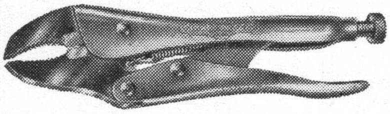
Made of special alloy steel, heat treated for utmost toughness. Light, trim and streamlined, nickel plated.

Thin tapered nose permits working in extremely close quarters. New scientifically designed jaws permits jaws to put tremendous pressure on four points of nut.



Without Wire Cutter

Nos.	7C	10C
Length, in.	7	10
Jaw, thickness, in.	¼	⅜
Jaws open, in.	1⅝	1⅞
Wt. each, lbs.	⅝	1¼
Each	$1.85	2.25

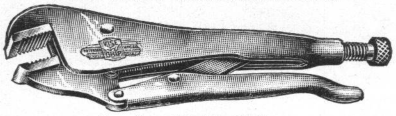


With Wire Cutter

Ton-pressure super-powered wire cutter cuts wire and small bolts.

Nos.	7W	10W
Length, in.	7	10
Jaws, thickness, in.	¼	⅜
Jaws open, in.	1⅝	1⅞
Wt. each, lbs.	⅝	1¼
Each	$2.25	2.50

VISE-GRIP ADJUSTABLE



Locks As It Grips

Made of high grade alloy tool steel with chrome added to the jaws for toughness, scientifically hardened and tempered. Bright cobalt nickel finish.

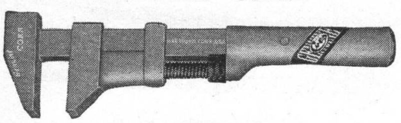
Exerts more than a ton of pressure between jaws. Jaws can be locked at any jaw opening. Adjustable to ratchet like action. Serves as a portable vise, pipe wrench, super pliers, etc.

Nos.	7	10
Length, in.	7	10
Jaws open, in.	1⅛	1¼
Wt. each, lbs.	¾	$1\frac{3}{16}$
Each	$1.65	1.95

All above, one in a box.

MONKEY WRENCHES

GENUINE "COES"



Steel Handle

Hardened steel bar, semi-steel casting jaws. Screw is one-piece of steel with a cut thread of especially strong section. Handle is a semi-steel casting. A wrench for heavy duty work. Rust-proof finish.

Length, in.	Per dozen	Opens, inch	Wt. per dozen, lbs.
10	$22.00	1¾	27
12	28.00	2¼	45
15	38.00	2⅝	60
18	48.00	3	85

One-half dozen in a package.

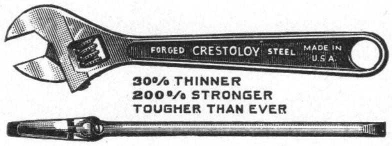
ADJUSTABLE WRENCHES

CRESCENT "CRESTOLOY"

For the Tough Jobs

Forged Crestoloy steel, chromium plated. A special method of finishing the handle prevents the tool from becoming slippery when used with wet or oily hands.

These wrenches are harder, stronger and tougher than wrenches of ordinary steel or some of the so-called "alloy" steels. They will stand a strain of over twice that required to break a regular Crescent wrench, yet they are 30% thinner and much lighter.

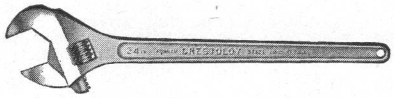


Single End

Nos.	AC14	AC16	AC18
Length, in.	4	6	8
Opens, in.	½	¾	$\frac{15}{16}$
Thickness head, in.			
Thickest point	$\frac{5}{16}$	$\frac{13}{32}$	$\frac{15}{32}$
Tip of jaws	⅛	$\frac{7}{32}$	¼
Wt. each, lbs.	⅛	$\frac{5}{16}$	½
Each	$1.70	1.70	2.00

Nos.	AC110	AC112
Length, in.	10	12
Opens, in.	1⅛	$1\frac{5}{16}$
Thickness head, in.		
Thickest point	$\frac{9}{16}$	¾
Tip of jaws	⅜	$\frac{15}{32}$
Wt. each, lbs.	$\frac{13}{16}$	1½
Each	$2.60	3.80

One in a box.

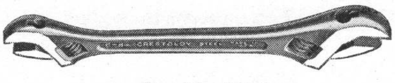


Single End, Tapered Handle

These big husky wrenches will stand a tremendous pull on the end of the tapered handle.

Nos.	AC115	AC118	AC124
Length, in.	15	18	24
Opens, in.	$1\frac{11}{16}$	$2\frac{1}{16}$	$2\frac{7}{16}$
Thickness head, in.			
Thickest point	$\frac{15}{16}$	1⅛	$1\frac{13}{32}$
Tip of jaws	$\frac{19}{32}$	$\frac{11}{16}$	⅞
Wt. each, lbs.	3⅜	5¼	9
Each	$5.60	9.25	15.20

One in a box.



Double End

Offers the added advantage of two wrench sizes on the one tool.

Nos.	BC146	BC168
Size, in.	4–6	6–8
Opens, in.	½–¾	¾–$\frac{15}{16}$
Thickness head, in.		
Thickest point	$\frac{5}{16}$–$\frac{13}{32}$	$\frac{13}{32}$–$\frac{15}{32}$
Tip of jaws	⅛–$\frac{7}{32}$	$\frac{7}{32}$–¼
Wt. each, lbs.	⅜	$\frac{9}{16}$
Each	$2.80	3.15

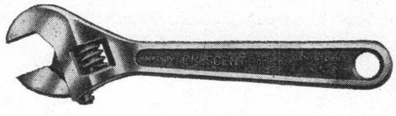
One in a box.

Note—See next column for listing of parts.

ADJUSTABLE WRENCHES

CRESCENT

Drop forged special analysis steel, heat treated by latest methods. Fitting of parts is accurate, so that they always work smoothly and easily, making one hand adjustment possible at all times. Polished with black finish web.



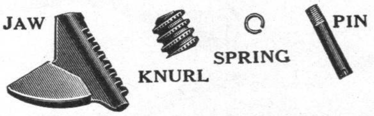
Single End

Nos.	A14	A16	A18	A110
Length, in.	4	6	8	10
Opens, in.	½	¾	$\frac{15}{16}$	1⅛
Wt. each, lbs.	⅛	$\frac{5}{16}$	⅝	1⅛
Each	$1.35	1.35	1.65	2.00

Nos.	A112	A115	A118
Length, in.	12	15	18
Opens, in.	$1\frac{5}{16}$	$1\frac{11}{16}$	$2\frac{1}{16}$
Wt. each, lbs.	2	$4\frac{5}{16}$	7
Each	$3.05	4.65	6.75

One in a box.

PARTS FOR CRESCENT ADJUSTABLE WRENCHES



For Regular Single and Double End

Size, in.	Jaws Nos.	Each	Knurls Nos.	Each
4	A- 14J	$0.40	A- 14K	$0.15
6	A- 16J	.40	A- 16K	.15
8	A- 18J	.45	A- 18K	.20
10	A-110J	.55	A-110K	.25
12	A-112J	.85	A-112K	.35
15	A-115J	1.20	A-115K	.45
18	A-118J	1.60	A-118K	.50

Size, in.	Pins Nos.	Each	Springs Nos.	Each
4	A- 14P	$0.06	A- 14S	$0.06
6	A- 16P	.06	A- 16S	.06
8	A- 18P	.06	A- 18S	.06
10	A-110P	.06	A-110S	.06
12	A-112P	.13	A-112S	.06
15	A-115P	.13	A-115S	.06
18	A-118P	.13	A-118S	.06

PARTS FOR "CRESTOLOY" ADJUSTABLE WRENCHES

For Single and Double End

Size, in.	Jaws Nos.	Each	Knurls Nos.	Each
4	AC- 14J	$0.45	AC- 14K	$0.20
6	AC- 16J	.45	AC- 16K	.20
8	AC- 18J	.50	AC- 18K	.20
10	AC-110J	.65	AC-110K	.25
12	AC-112J	.95	AC-112K	.35
15	AC-115J	1.45	AC-115K	.50
18	AC-118J	1.75	AC-118K	.60
24	AC-124J	2.65	AC-124K	.75

Size, in.	Pins Nos.	Each	Springs Nos.	Each
4	AC- 14P	$0.06	AC- 14S	$0.06
6	AC- 16P	.06	AC- 16S	.06
8	AC- 18P	.06	AC- 18S	.06
10	AC-110P	.06	AC-110S	.06
12	AC-112P	.13	AC-112S	.06
15	AC-115P	.13	AC-115S	.06
18	AC-118P	.15	AC-118S	.06
24	AC-124P	.20	AC-124S	.06

Open stock.

Note—Parts for Crescent and Crescent "Crestoloy" wrenches do not interchange.

ENGINEERS' WRENCHES

WILLIAMS "SUPERIOR"; CARBON STEEL

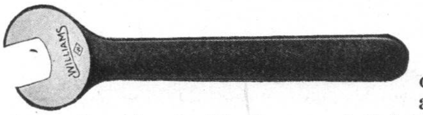
15 Degree Angle, Double Head

Drop forged carbon steel; openings milled, surfaces and edges smoothed, sizes stamped on head. Black enamel finish, polished heads.

Nos.	Each	Nominal openings, in.	Amer. std. heavy nuts, bolt, in.	Amer. std. hex. hd. cap screws, diam., in.	Amer. std. reg. nuts, bolt, in.	Lgth., in.	Wt. each, lbs.
721	$ 0.51	5/16- ⅜	⅛	⅛- 3/16	....	4⅛	.08
723	.63	⅜- 7/16	....	3/16- ¼	¼	4½	.11
725	.77	7/16- ½	¼	¼- 5/16	¼	5¼	.17
725A	.77	7/16- 9/16	....	¼- ⅜	¼- 5/16	4¼	.17
725B	.77	½- 9/16	¼	5/16- ⅜	5/16	5¾	.17
25	.77	½- 19/32	¼- 5/16	5/16	....	5¾	.22
727	.95	9/16- ⅝	....	⅜- 7/16	5/16- ⅜	6¼	.25
27	.95	19/32- 11/16	5/16- ⅜	....	....	6¾	.33
27B	.95	⅝- 11/16	⅜	7/16	⅜	6¾	.33
28	1.13	19/32- 25/32	5/16- 7/16	....	....	7¼	.42
729	1.13	⅝- ¾	....	7/16- ½	⅜- 7/16	7¼	.39
29B	1.13	11/16- ¾	⅜	½	7/16	7⅞	.48
29	1.13	11/16- 25/32	⅜- 7/16	....	....	7⅞	.48
29C	1.13	11/16- 13/16	⅜	9/16	½	7⅞	.47
731	1.38	¾- 13/16	....	½- 9/16	7/16- ½	9⅛	.75
731A	1.38	¾- ⅞	½	½- ⅝	7/16- 9/16	9⅛	.75
31B	1.38	25/32- 13/16	7/16	9/16	½	9⅛	.73
31	1.38	25/32- ⅞	7/16- ½	⅝	9/16	9⅛	.70
731B	1.38	13/16- ⅞	½	9/16- ⅝	½- 9/16	9⅛	.75
32B	1.67	13/16- 15/16	9/16	9/16	½	10	.98
33A	1.67	⅞- 15/16	½- 9/16	⅝	9/16	10	.98
733	1.67	⅞-1	½	⅝- ¾	9/16- ⅝	10	.97
33C	1.67	15/16-1	9/16	¾	⅝	10	.97
34	2.08	⅞-1 1/16	½- ⅝	⅝	9/16	11	1.3
34A	2.08	15/16-1 1/16	9/16- ⅝	....	....	11	1.3
735	2.08	1 -1⅛	....	¾- ⅞	⅝- ¾	11	.88
36B	2.93	1 1/16-1⅛	⅝	⅞	¾	12⅜	2
37	2.93	1 1/16-1¼	⅝- ¾	....	....	12⅜	1.9
737	2.93	1⅛-1¼	¾	⅞	¾	12⅜	2
37A	2.93	1⅛-1 5/16	....	⅞-1	¾- ⅞	12⅜	1.9
39B	4.26	1¼-1 5/16	¾	1	⅞	14	2.7
39	4.26	1¼-1 7/16	¾- ⅞	....	....	14	2.8
39A	4.26	1 5/16-1½	....	1 -1⅛	⅞-1	14	2.8
39C	4.26	1⅜-1 7/16	⅞	....	....	14	2.5
41	5.79	1 7/16-1⅝	⅞-1	....	....	15¾	3.8
41B	5.79	1½-1⅝	1	1⅛	1	15¾	3.8
42A	8.09	1½-1 11/16	....	1⅛-1¼	1 -1⅛	17	5.8
43	8.09	1⅝-1 13/16	1 -1⅛	....	....	17	5.8
44A	10.99	1 11/16-1⅞	....	1¼	1⅛-1¼	19	7.3
45	10.99	1 13/16-2	1⅛-1¼	....	....	19	7.1
45A	10.99	1⅞-2 1/16	....	....	1¼-1⅜	19	6.7

ENGINEERS' WRENCHES

WILLIAMS "SUPERIOR," CARBON STEEL



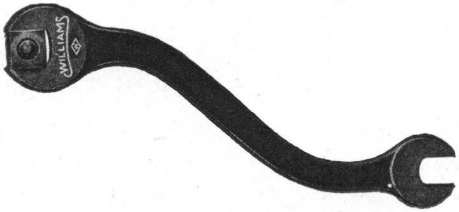
15 Degree Angle, Single Head

Drop forged carbon steel; openings milled, surfaces and edges smoothed, size stamped on head. Black enamel finish, polished head.

Nos.	Each	Nominal openings, in.	Amer. std. heavy nuts, bolt, in.	Amer. std. hex. hd. cap screw, diam., in.	Amer. std. light nuts, bolt, in.	Lgth., in.	Wt. each, lbs.
1	$ 0.56	½	¼	5/16	5/16	4⅝	.13
2	.68	19/32	5/16	...	...	5½	.20
3	.80	11/16	⅜	...	...	6⅜	.33
4	.97	25/32	7/16	...	...	7¼	.42
5	1.17	⅞	½	⅝	9/16	8⅛	.61
6	1.41	15/16	9/16	...	⅝	9¼	.91
7	1.74	1 1/16	⅝	...	¾	10½	1.3
8	2.30	1¼	¾	...	⅞	12	2.1
9	3.51	1 7/16	⅞	...	1	13½	2.7
10	4.88	1⅝	1	...	1⅛	15	3.5
11	6.41	1 13/16	1⅛	...	1¼	16½	4.6
12	8.69	2	1¼	...	1⅜	18¼	5.8
13	11.13	2 3/16	1⅜	...	1½	20	7.2
14	14.04	2⅜	1½	...	...	22	10
15	17.08	2 9/16	1⅝	...	...	24	11.1
16	20.43	2¾	1¾	...	...	27	13.6
17	31.26	3⅛	2	...	...	30	18.9

"S" OR CAR WRENCHES

WILLIAMS "SUPERIOR," CARBON STEEL



22½ Degree Angle, Double Head

Milled, hardened all over; shot blasted; heads not bright.

Nos.	Each	Openings milled, in.	Amer. std. heavy nuts, bolts, in.	Amer. std. reg. nuts, bolts, in.	Lgth. in.	Wt. each, lbs.
367A	$ 2.30	⅝- 13/16	....	⅜- ½	12	1.4
367	2.30	11/16- ⅞	⅜- ½	9/16	12	1.4
370C	3.83	13/16- ⅞	½	½- 9/16	19	2.7
370A	3.83	13/16-1	....	½- ⅝	19	2.6
370	3.83	⅞-1 1/16	½- ⅝	9/16	19	2.6
370B	3.83	1 -1⅛	....	⅝- ¾	19	2.5
372A	4.72	1 1/16-1¼	⅝- ¾	....	20	3.3
373	4.72	1⅛-1 5/16	....	¾- ⅞	20	3.1
376A	5.64	1¼-1 7/16	¾- ⅞	....	21	4.2
376	5.64	1 5/16-1½	....	⅞-1	21	4
378A	6.88	1 7/16-1⅝	⅞-1	....	22	4.9
379	6.80	1½-1 11/16	....	1 -1⅛	22	4.7
382A	8.09	1⅝-1 13/16	1 -1⅛	....	23	6.1
382	8.09	1 11/16-1⅞	....	1⅛-1¼	23	6.3
383B	9.60	1⅞-2¼	....	1¼-1½	24	6.5
385	9.60	1 13/16-2	1⅛-1¼	....	24	6.7
389	13.72	2 -2⅜	1¼-1½	....	25	9.6
389B	13.72	2 3/16-2⅜	1⅜-1½	....	25	9.4

All above, open stock.

ENGINEERS' WRENCH SETS

WILLIAMS

15 Degree Angle, Double Head

Drop forged alloy steel, heat treated and chrome plated over nickel, heads polished bright. Long thin jaws. In metal clip container.

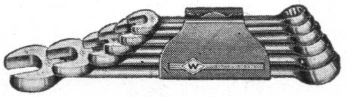
Per set

No. 6A—Set, consists of 6 double head wrenches with 12 openings, measuring ⅜, 7/16, ½, 9/16, 19/32, 11/16, ⅝, ¾, 25/32, ⅞, 15/16 and 1 in.; wt. per set 2½ lbs. $3.70

One set in a box.

OPEN END-BOX WRENCH SETS

WILLIAMS



Drop forged alloy steel. Heat treated and chrome plated over nickel. Open end has slim jaws with opening angles of 15°; 12-point box end is offset from plane of handle. In metal clip container.

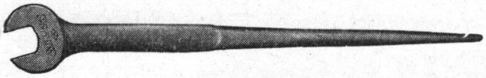
Per set

No. 60B—Set, consists of 6 open end-box wrenches with ⅜ in. 7/16, ½, 9/16, ⅝ and ¾ in. openings on both heads; wt. per set 1⅓ lbs. $5.10

One set in a box.

CONSTRUCTION WRENCHES

WILLIAMS "SUPERIOR", CARBON STEEL



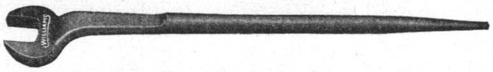
15 Degree Angle

Drop forged steel black finish over all, milled and hardened. Tang is for bringing bolt holes into line and for insertion into convenient openings when not in use.

Nos.	Each	Nominal opening, in.	Amer. std. heavy nuts, bolts, in.	Amer. std. regular nuts, bolts, in.	Lgth., in.	Thick. head, in.	Wt. ea., lbs.
205A	$1.84	13/16	..	½	14½	17/32	1
205	1.84	⅞	½	9/16	14½	17/32	1
206	1.84	15/16	9/16	..	14½	17/32	1
206B	1.84	1	..	⅝	14½	17/32	1
207	2.38	1 1/16	⅝	..	17	⅝	1.7
207A	2.38	1⅛	..	¾	17	⅝	1.7
208	3.12	1¼	¾	..	19	11/16	2.6
208A	3.12	1 5/16	..	⅞	19	11/16	2.6
209	4.11	1 7/16	⅞	..	21	¾	3.7
209A	4.11	1½	..	1	21	¾	3.7
210	5.49	1⅝	1	..	23	27/32	5.3

STRUCTURAL WRENCHES

WILLIAMS "SUPERIOR," CARBON STEEL



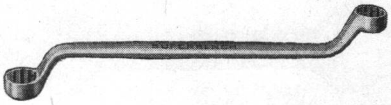
Straight Opening, Offset Handle

Drop forged steel, black finish over all; milled and hardened. Tang is for bringing bolt hole into line and for inserting into convenient openings when not in use.

Nos.	Each	Nominal opening, in.	Amer. std. heavy nuts, bolts, in.	Amer. std. regular nuts, bolts, in.	Lgth., in.	Thick. head, in.	Wt. ea., lbs.
905A	$2.13	13/16	..	½	14½	17/32	1.2
905	2.13	⅞	½	9/16	14½	17/32	1.2
906B	2.13	1	..	⅝	14½	17/32	1.2
907	2.83	1 1/16	⅝	..	17	⅝	1.9
907A	2.83	1⅛	..	¾	17	⅝	1.9
908	3.59	1¼	¾	..	19	11/16	2.9
908A	3.59	1 5/16	..	⅞	19	11/16	2.9
909	4.58	1 7/16	⅞	..	21	¾	4
909A	4.58	1½	..	1	21	¾	4
910	6.25	1⅝	1	..	23	13/16	5.3

DOUBLE OFFSET BOX WRENCHES

WILLIAMS "SUPERRENCHES"



Chrome-Molybdenum, 12-Point Openings, Long Pattern

Forged from chrome-molybdenum steel, heat treated, chrome plated over nickel.

Thin head walls permit use where clearance is extremely limited. The openings grip hex nuts on six sides, preventing all slipping and rounding of nut corners.

Each head has a 12-point opening, hex nuts can be completely rotated where the swing of the wrench is limited to 30 per cent —less than 1/10 of a full turn.

Nos.	Each	Nominal openings, in.	Amer. std. heavy nut, bolt, in.	Amer. std. hex hd. screws, diam., in.	Amer. std. regular nuts, bolt, in.	Lgth., in.	Wt. ea., lbs.
8723	$1.28	⅜–7/16	.....	3/16–¼	¼	7¾	.26
8725	1.28	7/16–½	¼	¼–5/16	¼	8¼	.37
8725B	1.40	½–9/16	¼	5/16–⅜	5/16	8¾	.43
8025	1.40	½–19/32	¼–5/16	5/16	.....	8¾	.43
8727	1.42	9/16–⅝	.....	⅜–7/16	5/16–⅜	9¾	.59
8027	1.56	19/32–11/16	5/16–⅜	.....	.....	11	.84
8729	1.56	⅝–¾	.....	7/16–½	⅜–7/16	11	.8
8029	1.56	11/16–25/32	⅜–7/16	.....	.....	11	.84
8731A	1.68	¾–⅞	½	½–⅝	7/16–9/16	12½	1
8031	1.68	25/32–⅞	7/16–½	⅝	9/16	12½	1
8033C	2.49	15/16–1	9/16	¾	⅝	14½	1.1
8034A	3.75	15/16–1 1/16	9/16–⅝	.....	.....	15½	1.3

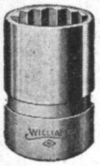
SOCKET WRENCHES

WILLIAMS "SUPERSOCKET" STANDARD PATTERN

½ in. Square Drive

All parts made from a superior grade of chrome-molybdenum steel, heat-treated chrome plated over nickel.

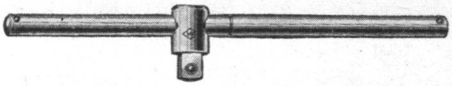
SOCKETS



Straight Wall 12-Point Sockets For Hex Nuts

Nos.	Each	Size opening in.	Amer. std. (USS), size bolt, in.	Amer. std. cap screw, dia. screw, in.	Amer. std. (SAE), size bolt, in.	Amer. std. screw, hex nut, in.
ST-1212	$0.79	⅜	..	3/16	..	..
ST-1214	.79	7/16	..	¼	¼	¼
ST-1216	.79	½	¼	5/16	5/16	..
ST-1218	.79	9/16	..	⅜	⅜	5/16
ST-1219	.79	19/32	5/16	..	..	..
ST-1220	.79	⅝	..	7/16	7/16	⅜
ST-1221	.91	21/32	..	..	..	..
ST-1222	.91	11/16	⅜	..	..	..
ST-1224	.91	¾	..	½	½	7/16
ST-1225	.96	25/32	7/16	..	..	..
ST-1226	1.03	13/16	..	9/16	..	½
ST-1228	1.03	⅞	½	⅝	9/16	9/16
ST-1230	1.16	15/16	..	..	⅝	..
ST-1231	1.16	31/32	9/16	..	..	..
ST-1232	1.16	1	..	¾	..	⅝
ST-1234	1.32	1 1/16	⅝	..	¾	..
ST-1236	1.52	1⅛	..	⅞	..	¾
ST-1238	1.56	1 3/16	..	..	..	..
ST-1240	1.64	1¼	¾	..	⅞	..

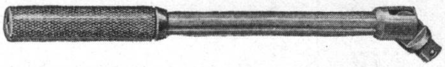
HANDLES AND PARTS



Sliding T Handles

Each

No. S-20A—11 in. long; wt. each 1 lb. $2.37

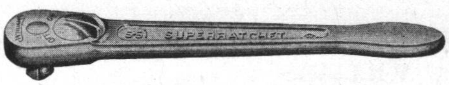


Flex Handles

Flexible head. Knurled grip with ½ in. square drive hole in end, may be used as extension.

Each

No. S-40—12 in. long; wt. each 1⅜ lbs. $4.59

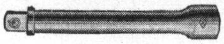


Reversible Ratchet Handle

With 24 teeth in ratchet gear instead of 16. Turning shift lever reverses action.

Each

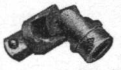
No. S-51—10½ in. long; wt. each 1⅜ lbs. $6.96



Extension Bars

Each

No. S-110P—5½ in. long; wt. each ⅝ lb. $1.52



Universal Joints

Operating range of approximately 140 degrees.

Each

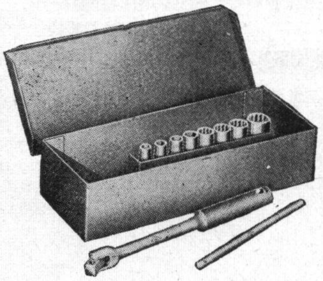
No. S-140—Wt. each ⅜ lb. $2.97

All above, open stock.

SOCKET WRENCH SETS

WILLIAMS DIAMOND "W"

Selected Alloy Steel Parts; Chrome Plated Over Nickel



¼ in. Square Drive

A compact, handy assortment for use on fussy little jobs and delicate adjustments where ordinary wrenches are clumsy and inadequate.

Invaluable time saver on generators, magnetos, carburetors, wiring connections, radios, etc.

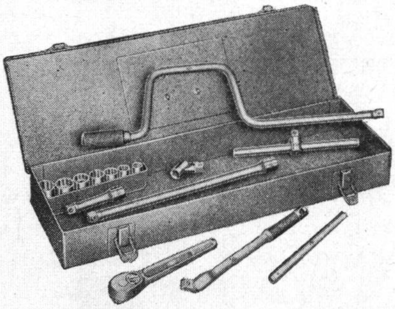
Handsome, durable, metal case finished in a new satin wrinkle enamel baked on, designed to provide ample space for the addition of other tools.

Contents of Set

4—Hex Sockets, one each 3/16, 7/32, ¼ and 9/32 in.
4—12 point Sockets, one each 5/16, 11/32, ⅜ and 7/16 in.
1—Flex Handle
1—Sliding Bar

Per set

No. 310M—10 pieces as enumerated above, in a durable metal case; wt. per set 1 lb. $3.10



⅜ in. Square Drive

A wide range of service with the smallest number of tools is provided in this comprehensive assortment. Their slim design permits them to reach hard to get at places. This selection makes possible hundreds of wrench combinations necessary in accomplishing difficult jobs.

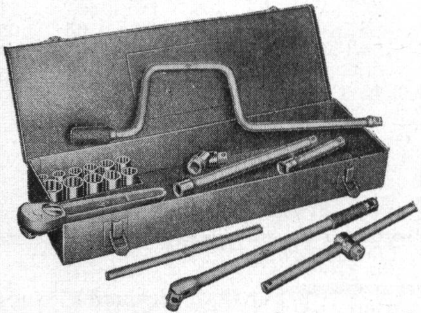
Handsome, durable metal case finished in a new satin wrinkle enamel baked on design to provide ample space for additions of other tools.

Contents of Set

7—12 point Sockets, one each ⅜, 7/16, ½, 9/16, ⅝, 11/16, ¾ in.
1—Reversible Ratchet
2—Extensions—(long and short)
1—Speeder
1—Flex Handle
1—Universal Joint
1—Sliding T Handle
1—Sliding Bar

Per set

No. 315B—15 pieces as enumerated above, in a durable metal case; wt. per set 7 lbs. $14.10



½ in. Square Drive

Garage mechanics and all tool-users will find unlimited built-up wrench combinations possible with this set. Heat treated for maximum tough strength and built to stand long, hard service.

Contents of Set

11—12 point Sockets, one each 7/16, ½, 9/16, 19/32, ⅝, 21/32, 11/16, ¾, 13/16, ⅞, and 1 in.
1—Reversible Ratchet
2—Extensions—(long and short)
1—Speeder
1—Flex Handle
1—Universal Joint
1—Sliding T Handle
1—Sliding Bar

Per set

No. 320S—19 pieces as enumerated above, in a durable metal case; wt. per set 14 lbs. $21.80

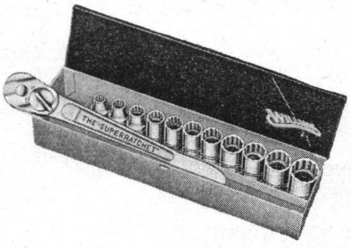
All above, one set in a box.

Note—Dimensions given for the sockets in all these sets are the "size opening." For table of size nuts which they fit, see preceding page.

SOCKET WRENCH SETS

WILLIAMS "SUPERSOCKET"

Selected Alloy Steel Parts; Chrome Plated Over Nickel



Standard Pattern ½ in. Square Drive

Accurately made from selected alloy steel, heat treated and chrome plated.

In a 2⅛x3x12½ in. steel case, attractively finished in red and black.

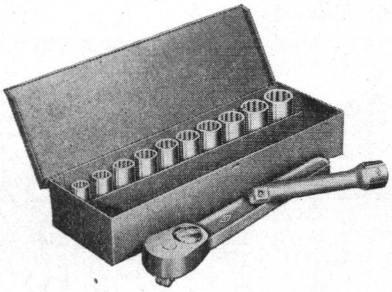
Contents of Set

11—12 point Sockets, one each ⅜, 7/16, ½, 9/16, 19/32, ⅝, 11/16, ¾, 25/32, ⅞ and 1 in.
1—Reversible Ratchet, 10½ in. long.

Per set

No. S-1—12 pieces as enumerated above, in a durable metal case; wt. per set 4¾ lbs. $19.54

WILLIAMS DIAMOND "W"



½ in. Square Drive

Selected alloy steel parts. Chrome-plated over nickel.

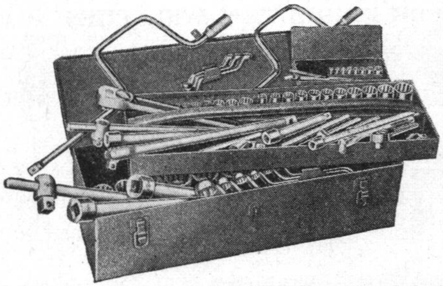
A small compact set in a handsome durable metal case finished in a new satin wrinkle enamel baked on, designed to provide ample space for other tools.

Contents of Set

10—12 point Sockets, one each 7/16, ½, 9/16, 19/32, ⅝, 21/32, 11/16, ¾, 13/16, and ⅞ in.
1—Reversible Ratchet
1—Extension Bar

Per set

No. 330S—12 pieces as enumerated above, in a durable metal case; wt. per set 4¾ lbs. $10.50



¼, ⅜, ½ and ¾ in. Square Drive

Selected alloy steel parts. Chrome-plated over nickel.

A complete assortment of box and socket wrenches with every popular opening from 3/16 to 1⅝ in.

Handsome, durable metal case with removable tote tray, finished in a new satin wrinkle enamel baked on, designed to provide ample space for the addition of other tools.

Contents of Set

4—6 point, ¼ in. Drive Sockets, one each 3/16, 7/32, ¼, 9/32 in.
4—12 point ¼ in. Drive Sockets, one each 5/16, 11/32, ⅜, 7/16 in.
7—12 point ⅜ in. Drive Sockets, one each ⅜, 7/16, ½, 9/16, ⅝, 11/16 and ¾ in.
11—12 point ½ in. Drive Sockets, one each 7/16, ½, 9/16, 19/32, ⅝, 21/32, 11/16, ¾, 13/16, ⅞ and 1 in.
8—12 point ¾ in. Drive Sockets, one each 1 1/16, 1⅛, 1¼, 1 5/16, 1⅜, 1 7/16, 1½ and 1⅝ in.
2—Reversible Ratchets, one each ⅜ and ½ in. drives.
6—Extensions (three long, three short) for ⅜, ½ and ¾ in. drives.
2—Speeders, one each ⅜ and ½ in. drives.
3—Flex Handles, one each ¼, ⅜ and ½ in. drives.
2—Universal Joints, one each ⅜ and ½ in. drives.
2—Sliding T Handles, one each ⅜ and ½ in. drives.
4—Sliding Bars, one each ¼, ⅜, ½ and ¾ in. drives.
3—Offset Box Wrenches, short pattern, ⅜, 7/16, ½, 9/16, 19/32 and ⅝ in. openings.
6—Offset Box Wrenches, long pattern, ⅜, 7/16, ½, 9/16, 19/32, ⅝, 11/16, ¾, 25/32, ⅞, 15/16 and 1 in. openings.

Per set

No. 355C—64 pieces as enumerated above, in a durable metal case; wt. per set 15 lbs. $67.10

All above, one set in a box.

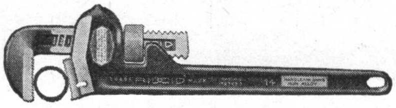
PIPE WRENCHES

RIDGID

Guaranteed Unbreakable Housing

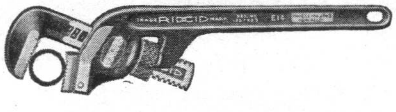
Alloy steel hook jaw will not get a hollow back or break. Tool steel heel jaw is replaceable.

Powerful I-beam steel handle has comfortable grip. Adjusting nut rides perfectly free in an open housing.



Straight Type; Steel Handle

The standard pipe wrench.



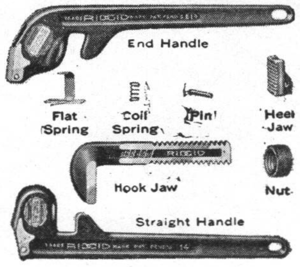
End Type; Steel Handle

For getting into tight places, such as coil pipes, against a wall, etc.

Straight Type Nos.	Straight Type Each	End Type Nos.	End Type Each	Lgth., in.	For pipe, in.	Wt. each, lbs.
6	$ 1.90	E 6	$ 1.90	6	¾	½
8	2.20	E 8	2.20	8	1	¾
10	2.85	E10	2.85	10	1½	1¾
12	3.35	E12	3.35	12	2	2¾
14	3.85	E14	3.85	14	2	3½
18	5.50	E18	5.50	18	2½	5¼
24	9.50	E24	9.50	24	3	8¾
36	20.00	E36	20.00	36	4½	16¼
48	30.00	...	.....	48	6	28
60	45.00	...	.....	60	8	43¼

Nos. 6 to 24, six in a box; Nos. 36 to 60, open stock.

EXTRA PARTS FOR RIDGID PIPE WRENCHES



For Regular or End Type Wrenches

Prices are Each

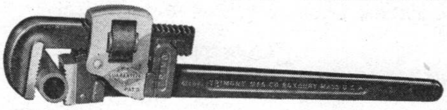
For wrench, in.	6	8	10	12	14
Straight handle	$1.75	1.95	2.50	2.85	3.45
End handle	1.75	1.95	2.50	2.85	3.45
Hook jaw	.65	.70	1.10	1.25	1.50
Heel jaw	.40	.45	.55	.65	.65
Pin	.03	.03	.04	.04	.04
Coil spring	.03	.03	.03	.03	.03
Flat spring	.20	.20	.20	.25	.30
Nut	.15	.15	.20	.25	.30

For wrench, in.	18	24	36	48	60
Straight handle	$4.95	7.95	15.00	25.00	35.00
End handle	4.95	7.95	15.00	.....	.....
Hook jaw	2.15	3.50	5.70	9.00	17.00
Heel jaw	.75	.85	1.15	2.05	4.55
Pin	.04	.04	.05	.05	.05
Coil spring	.04	.04	.04	.04	.04
Flat spring	.40	.50	.60	.80	1.50
Nut	.35	.55	1.10	2.00	4.00

Open stock.

PIPE WRENCHES

NEW "TRIMO-ALLOY"



Straight Pattern, Steel Handle

Made entirely of heat treated chrome-molybdenum, manganese and nickel steel alloys. Interchangeable in all parts.

Never locks on the pipe, crushes the pipe or slips; grips firmly and releases rapidly; inserted jaw in handle can be replaced when dull or worn; round threads on movable jaw and nut will not strip. Spiral spring cannot break or fall out, gives twice the flexibility. Equipped with nut guards.

Lgth., in.	Each	For pipe, in.	Wt. each, lbs.
6	$ 1.90	⅛ to ½	½
8	2.20	⅛ to ¾	¾
10	2.85	⅛ to 1	1½
14	3.85	¼ to 1½	3
18	5.50	¼ to 2	5
24	9.50	¼ to 2½	8½
36	20.00	½ to 3½	17
48	30.00	1 to 5	24

6 to 18 in., six in a box; 24 to 48 in., open stock.

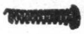
EXTRA PARTS FOR NEW "TRIMO-ALLOY" PIPE WRENCHES

Movable Jaw

Nut

Insert Jaw

Frame



Spring and Pin

Nut with Guards Inserted

All prices are each, except nut guards which are priced per pair. Price of insert jaw, spring and frame includes pin.

Note—6 and 8 inch do not have nut guards or spring pins.

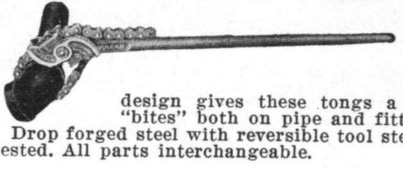
Prices are Each

For wrench, in.	6	8	10	14	18	24	36	48
Movable jaw	$0.65	.70	1.10	1.50	2.15	3.50	5.70	9.00
Nut	.15	.15	.20	.30	.35	.55	1.10	2.00
Insert jaw	.50	.55	.65	.85	.95	1.10	1.50	2.00
Frame and pin	.45	.55	.70	.80	.95	1.75	2.75	3.50
Spring and pin	.03	.03	.03	.03	.04	.04	.04	.04
Frame pin	.03	.03	.04	.04	.04	.04	.05	.05
Jaw pin	.03	.03	.04	.04	.04	.04	.05	.05
Nut guards (pair)	...	...	.20	.30	.35	.45	.55	.65
Handle	1.00	1.15	1.60	2.20	3.25	5.15	10.50	17.00

Open stock.

PIPE AND FITTING TONGS

WILLIAMS "VULCAN SUPERIOR"



For Both Pipe and Fittings

"V" recess in the jaws, combined with their general design gives these tongs a greater number of grips or "bites" both on pipe and fittings than ordinary tongs.

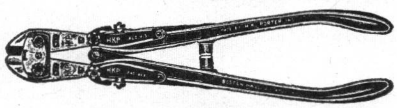
Drop forged steel with reversible tool steel jaws; flat link chain, proof tested. All parts interchangeable.

Nos.	Complete, each	Extra Chain, each	Extra Jaws, per pair	Bolt and Nut, per set	Pipe cap, in.	Lgth. over all, in.	Lgth. chain, in.	Wt. ea., lbs.
3	$20.16	$5.40	$11.52	$0.86	¾- 4	37	22½	17
3½	25.92	7.56	13.68	1.00	1 - 6	44½	32	26
4	31.68	9.72	15.84	1.30	1½- 8	50½	40½	34
5	51.84	16.20	21.60	1.88	2 -12	64½	55½	54

Open stock.

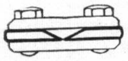
BOLT CLIPPERS

PORTER "HKP" NEW EASY



Designed in such practical and handy form that there are few branches of industry in which they are not useful.

In addition to the fine materials, the correct design and the accurate dimensions of each tool, the main advantage is the leverage principle by which hand-power applied at the handles is multiplied to tremendous proportions at the cutting edge.

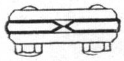


Clipper Cut

Rigid Head, Clipper Cut Jaws

Clipper cut tools are designed for close cutting, such as clipping of bolts flush to the surface, and are generally specified where a tool is required for all-around work in softer metals. Unless close cutting is desired, Center Cut Jaws are recommended.

Designed and tempered to cut wrought iron, annealed bolts, soft steel bolts, rivets, etc., cold drawn screw stock, machinery steel, annealed tool steel, non-ferrous metals, aluminum, brass, bronze, copper, etc.



Center Cut

Rigid Head, Center Cut Jaws

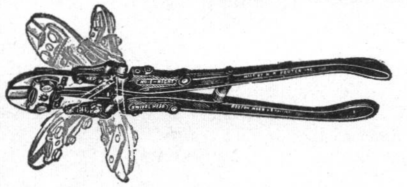
Center cut tools are recommended in all cases where close cutting is not required. This design gives greater support to the cutting edge, resulting in maximum durability. Suitable for cutting materials up to 300 Brinell hardness. Generally recommended for cutting cold-drawn spring wire and stranded guy wire.

				Capacities			
Clipper Cut Nos.	Center Cut Nos.	Each	Extra Jaws, per pair	Lgth., in.	Annealed bolts in thrd., in.	Soft rods, in.	Wt. each, lbs.
14-NE	14-NE-CC	$ 8.90	$ 4.70	14	5/16	¼	2⅞
0-NE	0-NE-CC	9.90	5.10	18	⅜	5/16	4¼
1-NE	1-NE-CC	11.90	6.00	24	7/16	⅜	6¾
2-NE	2-NE-CC	15.40	7.90	30	9/16	½	10½
3-NE	3-NE-CC	19.90	9.90	36	⅝	9/16	14¾
4-NE	4-NE-CC	25.80	11.60	42	¾	⅝	17¾

One in a box.

PORTER "HKP" NEW EASY

Swivel Head

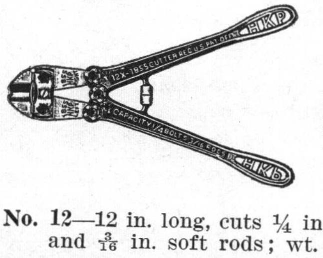


Where the jaws join the handles there is a ball and socket joint which permits the cutting head to swing from straight to any position or angle in a 180° arc. This "wrist action" enables the operator to reach around corners and over and under obstructions. Very often saves dismantling time and labor.

				Capacities			
Clipper Cut Nos.	Center Cut Nos.	Each	Extra Jaws, per pair	Lgth., in.	Annealed bolts in thrd., in.	Soft rods, in.	Wt. each, lbs.
0-SH	0-SH-CC	$12.90	$5.10	19	⅜	5/16	4⅝
1-SH	1-SH-CC	14.70	6.00	25	7/16	⅜	7¾
2-SH	2-SH-CC	18.40	7.90	31	9/16	½	11½

One in a box.

PORTER No. 12



Rigid Head, Clipper Cut Jaws

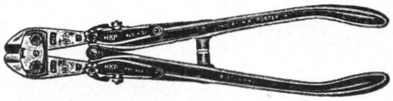
A handy cutter for comparatively light work and particularly useful for work on the farm or in the home workshop.

	Each
No. 12—12 in. long, cuts ¼ in. annealed bolts in the thread and 3/16 in. soft rods; wt. each 1½ lbs.	$5.40
Extra Jaws .... Per pair	3.50

One in a box.

REINFORCING BAR CUTTERS

PORTER "HKP" NEW EASY



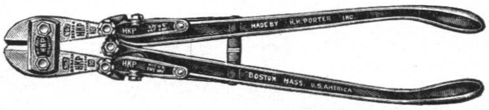
Rigid Head, Center Cut Jaws, Round Edge

For concrete reinforcing rods and for use in steel and wire mills.

Nos.	Each	Extra Jaws, per pair	Length, in.	Capacity Rebars, in.	Wt. each, lbs.
14-NE-CC-RE	$ 9.20	$ 4.90	14	3/16	2⅞
1-NE-CC-RE	12.20	6.30	24	5/16	6¾
3-NE-CC-RE	20.20	10.20	36	7/16	14¾
4-AR-CC-RE	26.10	11.90	42	½	17¾

One in a box.

PORTER "HKP" NEW EASY, HEAVY DUTY



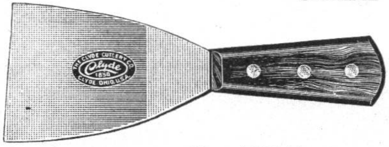
Rigid Head, Center Cut Jaws, Round Edge

The most rugged tool in the Porter line and recommended for continuous use in cutting of concrete reinforcing bars. Cutting head has heat-treated heavy forged straps to keep cutting edges in line, ground and recessed with grease pockets to minimize friction.

				Capacities			
Nos.	Each	Extra Jaws, per pair	Length, in.	Annealed bolts in thread, in.	Wire rope, in.	Rebars, in.	Wt. each, lbs.
2-HD	$20.90	$ 8.10	30	9/16	7/16	⅜	11¼
3-HD	25.20	10.20	36	⅝	½	7/16	16
4-HD	30.80	11.90	42	¾	⅝	½	19⅝

SCRAPING KNIVES

CLYDE



High carbon steel blade, polished; clip point; cocobolo handle; brass compression rivets. Not bolstered.

No. 1000½NB—Stiff Blade

Width blade, in.	3	3½
Wt. dozen, lbs.	3⅝	4
Per dozen	**$9.60**	**10.60**

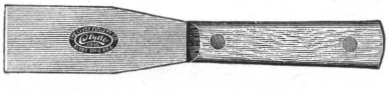
No. 1000¾NB—Half Elastic Blade

Width blade, in.	3	3½
Wt. dozen, lbs.	3½	3¾
Per dozen	**$10.60**	**11.40**

One-half dozen in a box.

PUTTY KNIVES

CLYDE



High Carbon Steel Blade

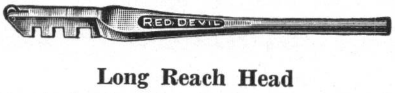
Polished, through tang; cocobolo handle; brass compression rivets. Not bolstered.

	Per dozen
No. 112½NBT—Stiff blade, 3½x1¼ in.; wt. per dozen 2¾ lbs.	**$5.76**
No. 113½NBT—Elastic blade, 3½x1¼ in.; wt. per dozen 2¾ lbs.	**6.12**

One dozen in a box.

GLASS CUTTERS

RED DEVIL



Long Reach Head

Uniform alloy steel wheel, hard smooth axle; pre-greased. Easy finger rest handle finished in bright red.

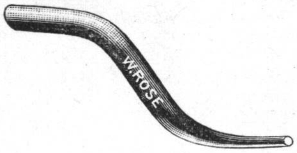
	Per dozen
No. 024—5 in. long; wt. per dozen ⅞ lb.	**$3.60**

One dozen in a display carton.

BRICK JOINTERS

ROSE

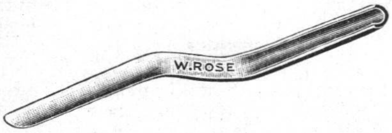
Tool steel, accurately tempered, ground and polished. Formed to fit the hand and be easily grasped.



No. 5042—Bullhorn

Diam. large end, in.	½	⅝
Wt. dozen, lbs.	6	8
Per dozen	$11.40	12.00

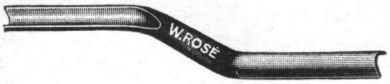
One-half dozen in a box.



No. 5121—Light Convex

Width faces, in.	⅜x½	½x⅝
Wt. dozen, lbs.	6	7
Per dozen	$10.80	10.80

One-half dozen in a box.



Light Concave

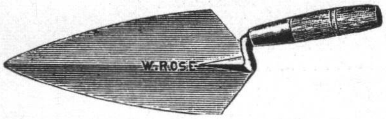
Per dozen

No. 5321—½x⅝ in. widths of faces; wt. per dozen 6 lbs. $12.00

One-half dozen in a box.

BRICK TROWELS

ROSE



No. 110—Philadelphia Pattern

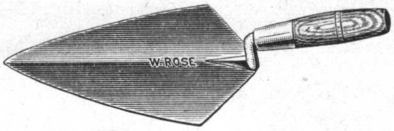
One-piece crucible steel blade, post and tang; tempered taper ground and polished. Six inch hardwood handle, polished steel ferrule.

Length blade, in.	10½	11	11½
Width blade, in.	5⅜	5 7/16	5½
Wt. dozen, lbs.	12½	13	13½
Per dozen	$43.80	43.80	43.80

One-half dozen in a box.

BRICK TROWELS

ROSE



Wide Heel Pattern

One-piece forged crucible steel blade, taper ground and polished; heavy square heel, flexible point. Solid shank. Six in. hardwood handle, massive polished steel ferrule.

Per dozen

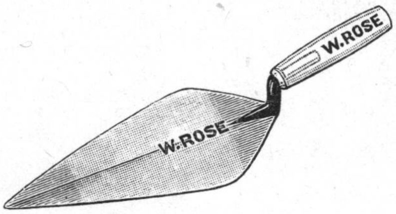
No. 221—Blade 11½ in. long, 6⅛ in. wide; wt. per dozen 13¾ lbs. $43.80

One-half dozen in a box.

With Good-Win-Tough Handle

The toughest handle composition known to man. It cushions the hand against shock and insulates it against electricity to some extent.

Shanks permit right finger room with center of hands 1¾ in. above bottom of blade.



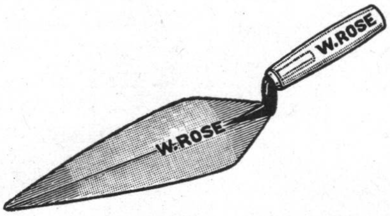
London Pattern

One-piece crucible steel blade, post and tang; taper ground and polished. 5¼ in. handle.

Per dozen

No. 1412—Blade 11 in. long, 5⅝ in. wide; wt. per dozen 13½ lbs. .$48.00

One-half dozen in a box.



Narrow London Pattern

One-piece crucible steel blade, post and tang; taper ground and polished. 5¼ in. handle.

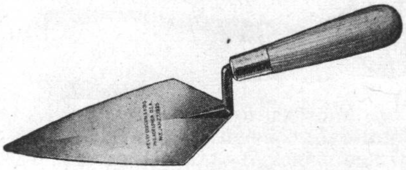
Per dozen

No. 1416—Blade 11½ in. long, 4⅞ in. wide; wt. per dozen 11¾ lbs. $48.00

One-half dozen in a box.

POINTING TROWELS

DISSTON



No. 15—Regular Pattern

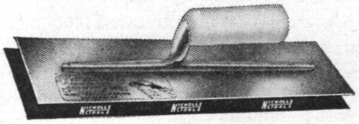
Forged one-piece Disston steel blade, post and tang; tempered, taper ground and polished. 4⅝ in. lacquered hickory handle; strong steel ferrule.

Length blade, in.	4	5	6
Width blade, in.	2⅛	2½	2¾
Wt. doz., lbs.	3	3½	4
Per dozen	$13.20	13.20	13.20

One-half dozen in a box.

CEMENT WORKERS' TROWELS

NICHOLLS "HAWKEYE"



Finishing Pattern

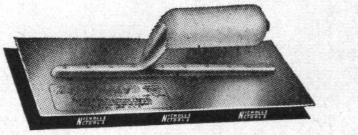
Swedish steel blade; stays straight with as little wear as possible. Special alloy shank that is not brass but has the appearance of brass and yet has the strength of hardened tool steel with the extending factor of staying straight and rigid so that stress of troweling cement "dry" has no effect upon it. Finest quality tapered wood handle.

Nos.	CM9	CM11
Length, in.	14	16
Width, in.	4	4
Wt. dozen, lbs.	15	16
Per dozen	$50.00	53.00

One-third dozen in a box.

PLASTERERS' TROWELS

NICHOLLS "ZEPHYRLITE"



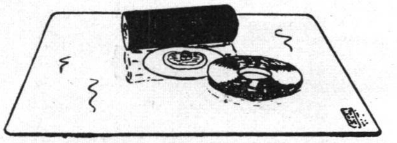
Finishing Pattern

Special analysis Swedish steel blade; drop forged aluminum shank; hardened steel rivets will not wear faster than the blade. Finest quality tapered wood handle.

Nos.	NZLS-3	NZLS-4	NZLS-6
Length, in.	11	11½	11½
Width, in.	4¾	4¾	4
Wt. dozen, lbs.	12½	13	11¾
Per dozen	$48.00	48.00	48.00

One in a box.

PLASTERERS' HAWKS
NICHOLLS



12 Ga. Hard Rolled Aluminum

Round corners prevent bending. Machine grooved, circular surface. One-piece zinc handle mounting, with bolt extending through entire handle.

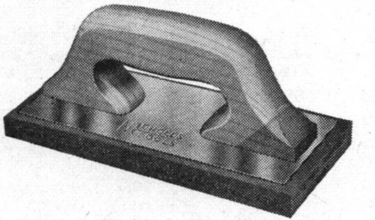
Callous-preventing ring supplied with each hawk.

Per dozen

No. NMM2—13½x13½ in.; wt. per dozen 32 lbs. $34.50

One in a box.

PLASTERERS' FLOATS
NICHOLLS



Rubber Faced

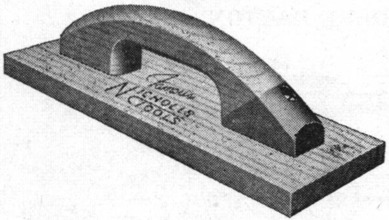
Molded rubber facing, aluminum back and solid wood handle.

Per dozen

No. RF-12—8x3¾x⅝ in.; wt. per dozen 12 lbs. $28.80

One-half dozen in a box.

CEMENT FLOATS
NICHOLLS



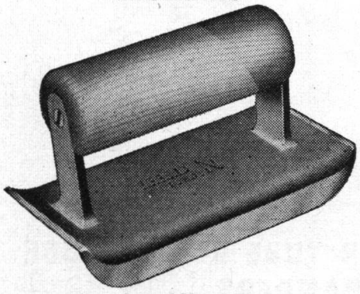
Plain Wood

Per dozen

No. CF-7—12x4½ in.; wt. per dozen 13 lbs. $21.00

Open stock.

CEMENT EDGERS
NICHOLLS



Special Alloy Face

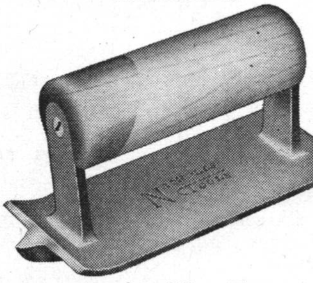
Seasoned and treated wood handle.

Per dozen

No. CE-17—5½x2¾x⅝ in.; wt. per dozen 10 lbs. $16.20

One-half dozen in a box.

CEMENT JOINTERS
NICHOLLS



Special Alloy Face

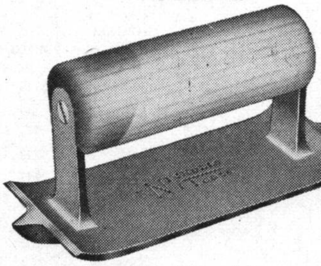
Seasoned and treated wood handle.

Per dozen

No. CJ-15—5⅝x2⅜x⅜ in.; wt. per dozen 10 lbs. $16.20

One-half dozen in a box.

CEMENT GROOVERS
NICHOLLS



Special Alloy Face

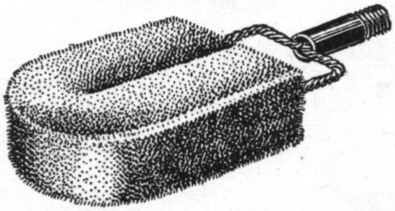
Seasoned and treated wood handle.

Per dozen

No. CG-16—6x2⅜x⅜ in.; wt. per dozen 10 lbs. $16.20

One-half dozen in a box.

BOILER BRUSHES
PILLEY



Fine Round Steel Wire

¼ in. pipe nipple.

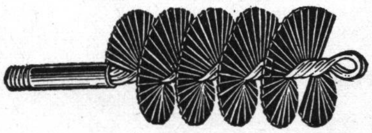
For use in Ideal, Mercer, Arco, Mueller and other sectional boilers.

Each

No. 6271—1¾x4½x6 in.; wt. each ½ lb. $1.50

Open stock.

FLUE BRUSHES
SINGLE SPIRAL



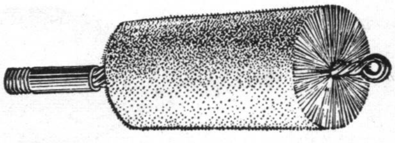
No. 585—Flat Steel Wire

Loop end. Equipped with ¼ in. pipe nipple.

For flue, in.	Each	Wt. ea., oz.
2	$0.90	6
2½	1.15	7½
3	1.35	9
3½	1.55	10½
4	1.80	12

One in a box.

FLUE BRUSHES
DOUBLE SPIRAL



No. 610—Round Steel Wire

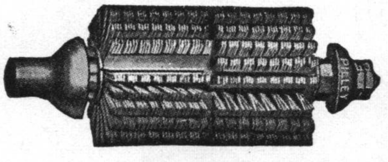
Equipped with ¼ in. pipe nipple.

OD, in.	Each	Wt. ea., oz.
1	$1.20	2
1½	1.20	3
2	1.20	4
2½	1.50	5
3	1.80	6
3½	2.10	7
4	2.40	8

One in a box.

Note—No. 610 is made in actual outside diameters, not in flue sizes.

IMPROVED EXPANSION



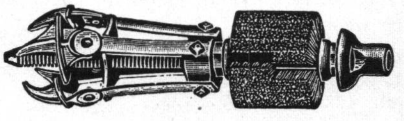
No. 555—Flat Steel Wire

Used where deposit is baked on flues so hard a scraper can not remove it. The flat steel wires are set so their cutting ends work lengthwise of the flues and the center of brush has an offset eliminating any blank space, thus cleaning entire surface of flue. Center of malleable iron with steel rod backing up wire, make it impossible for wires to lay over, push back or pull out. Size of pipe connection varies from ⅜ to ¾ in., depending upon the size of brush wanted.

For flue, in.	Each	Wt. each, lbs.
2	$2.70	1½
3	4.05	2¼
4	5.40	3

One in a box.

FLUE BRUSHES AND SCRAPERS
COMBINATION



No. 550—Malleable Iron and Steel

Operates quickly and easily; scraper fits snugly in the tube. Claws loosen the hard deposit and brush sweeps out the soot, leaving a thoroughly clean flue.

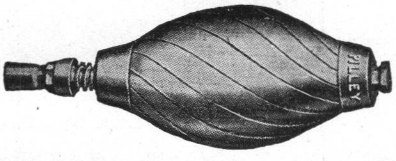
Pipe connection varies from ⅜ to ¾ in. depending on size of brush.

For flue, in.	Each	Wt. each, lbs.
2	$3.00	2
2½	3.75	2½
3	4.50	3
3½	5.25	3½
4	6.00	4

One in a box.

FLUE SCRAPERS

ELLIPTICAL



No. 565—Malleable Iron Castings and Spring Steel

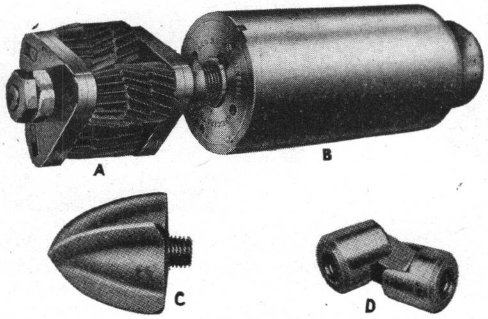
Substantially made and almost indestructible. Extremely flexible and will clean any flue no matter how distorted. The steel blades continually re-sharpen as the scraper is used.

For flue, in.	2	2½	3	3½	4
Pipe handle, in.	¼	¼	⅜	⅜	⅜
Wt. each, lbs.	1½	1⅞	2¼	2⅝	3
Each	$2.10	2.65	3.15	3.70	4.20

Open stock.

BOILER TUBE CLEANERS

DEMON AIR DRIVEN TYPE



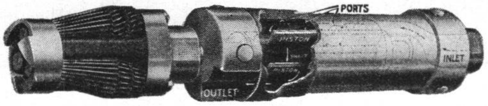
Operated by air pressure of 60 to 100 pounds.

The equipment furnished includes: A—cutter head; B—motor; C—drill head; D—universal joint.

Size, in.	3½	4
Wt. each, lbs.	22	24
Each	$105.00	105.00

Open stock.

DEMON WATER DRIVEN TYPE



For Straight Tubes

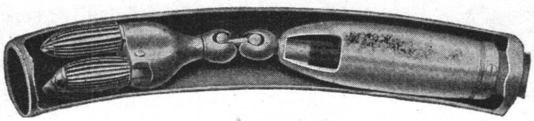
This cleaner is equipped with a powerful piston type motor operated by water pressure of 100 to 150 pounds.

The 3 cutter head shafts are non-yielding and the cutters are set to just fit the inside diameter of a clean tube.

The cutters cannot ride over scale and they cannot dig into the tube wall.

Size, in.	3	3½	4
Wt. each, lbs.	17	26	28
Each	$110.00	110.00	110.00

Open stock.



For Curved Tubes

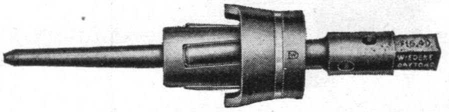
The cutter head just fits the tube when clean. Two of the cutter's arms are non-yielding, the third yielding slightly to pass the bends and flats.

Size, in.	3	3½	4
Wt. each, lbs.	17	17	21
Each	$110.00	110.00	110.00

Open stock.

BOILER TUBE EXPANDERS

WIEDEKE IDEAL ACE



No. 40—Self-Feeding, for Power or Hand Use

Mandrels and rolls are machined from controlled-quality high-alloy steels carefully heat treated to withstand severe operating strains.

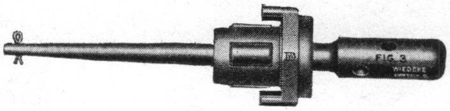
The loose guard straddles tube and bears against tube sheet; suitable for rolling new tubes and rerolling tubes with beaded or flared ends. Not too large for narrow bridges, and can work close to rivet line or shell. Hard bronze bearing between the guard and frame reduces friction to a minimum.

The three long rolls have generous radius on end to avoid leaving a sharp offset within the tube. The rolls lay at an angle to mandrel so that the mandrel when rotated will automatically feed inward.

For OD tube, in.	No. 40 Complete, each	Extra Mandrels, each	Extra Rolls, each	Enters ID tubes and expands to, in.	Ship. wt. each, lbs.
15/16	$16.00	$3.50	$0.30	25/32 to 29/32	4
1	16.00	3.50	.30	27/32 to 1	4
1¼	16.00	3.50	.30	1 1/16 to 1¼	4
1⅜	16.00	3.50	.30	1 5/32 to 1⅜	4
1½	16.00	3.50	.30	1 9/32 to 1½	5
2	16.00	3.50	.30	1 23/32 to 2	8
2½	19.50	4.50	.30	2 5/32 to 2½	12
3	22.00	5.50	.60	2⅝ to 3	19
3½	24.50	6.50	.70	3⅛ to 3½	23
4	27.00	7.50	.80	3 9/16 to 4	27

One in a box.

WIEDEKE DAYTON



No. 3—For Hand Use

Designed for satisfactory service at low cost and have large range for various tube gauges. For hand use only. Frame and rear collar in one piece.

For OD tube, in.	No. 3 Complete, each	Extra Mandrels, each	Extra Rolls, each	Enters ID tubes and expands to, in.	Ship. wt. each, lbs.
1	$10.00	$2.00	$0.20	25/32 to 29/32	2
1½	10.00	2.00	.20	1 7/32 to 1 7/16	2
2	10.00	2.00	.20	1 23/32 to 2	6
2½	14.00	2.50	.20	2 5/32 to 2½	8
3	18.00	3.75	.35	2⅝ to 3	11
3½	23.00	4.75	.50	3⅛ to 3½	16
4	27.00	5.75	.60	3 9/16 to 4	21

One in a box.

WIEDEKE WATER TUBE BOILER TUBE EXPANDERS

We can furnish these in many sizes not shown and for any type of Boiler such as B & W, Ideal Sterling, Heine, etc.

Special Catalogs and Prices Sent on Request

PORTABLE ELECTRIC DRILLS

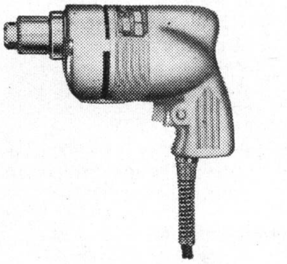
SKIL DRILL

Universal Motor, 115 Volts, AC or DC, Up to 60 Cycles

Skil Drills are unsurpassed for built-in quality, precision workmanship and soundness of design.

Body of high-strength aluminum alloy; die cast housing; helical cut gears; highest quality ground and lapped radial and thrust ball and roller bearings minimize friction and eliminate vibration.

¼ INCH COMPACT STANDARD DUTY



For fastest drilling even in tight spots. Built for day long operation on all production assembly and installation work. Lighter, more compact, perfectly balanced. A favorite with builders everywhere.

Each

Model 45—Capacity in steel ¼ in., no-load speed 1800 RPM, full load 1050 RPM, 6⅝ in. long over all; net wt. 2¾ lbs., ship. wt. 4 lbs. $42.00

¼ INCH COMPACT HEAVY DUTY

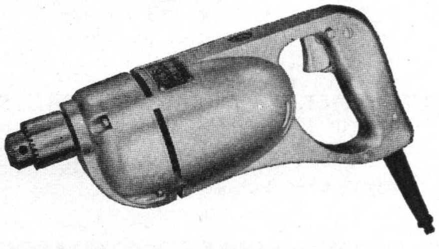
Small, light and compact like Model 45 but with even greater power for the toughest jobs. Greater drilling speed under load for more output per man on every job.

Each

Model 47—Capacity in steel ¼ in., no-load speed 1800 RPM, full load 1270 RPM; 7¼ in. long over all; net wt. 3¼ lbs., ship. wt. 4½ lbs. $45.00

Note—Speeds of 2500, 3500 and 5000 RPM for Models 45 and 47 are optional. Slow speeds of 550, 750 and 1000 RPM, $6.00 extra.

¼ INCH SPECIAL DUTY



Sets new standards of quality in the low priced drill field. Ideal for intermittent use by installation and maintenance men.

Each

Model 241—Capacity in steel ¼ in., no-load speed 2250 RPM, full load 1300 RPM; 11¼ in. long over all; net wt. 4¼ lbs., ship. wt. 6 lbs. $29.50

¼ INCH STANDARD DUTY

Recommended for general maintenance work when light weight and power are important. A sturdy, powerful tool suited for a variety of drilling operations.

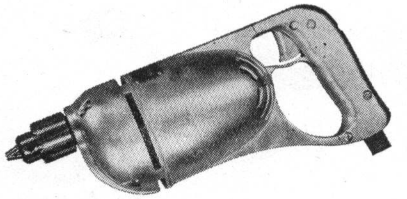
Each

Model 242—Capacity in steel, ¼ in., no-load speed 2000 RPM, full load speed 1200 RPM; 11⅞ in. long over all; net wt. 5½ lbs., ship wt. 7¼ lbs. $46.50

Note—Speeds of 3500 or 5000 RPM are optional.

All above, one in a box.

¼ INCH HEAVY DUTY



Sturdily built and powerful for continuous heavy duty work. This well-balanced, fast-drilling tool embodies all of the features considered essential for heavy duty drilling up to ¼ inch in steel.

Each

Model 243—Capacity in steel ¼ in., no-load speed 2000 RPM, full load speed 1200 RPM; 11⅞ in. long over all; net wt. 6 lbs., ship. wt. 7¾ lbs. $55.00

¼ INCH SLOW SPEED

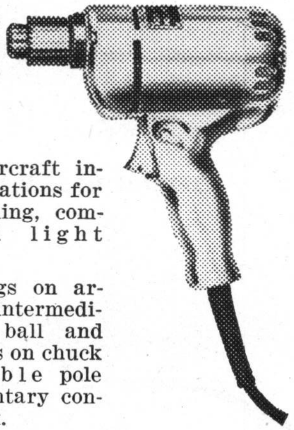
The slow speed of this drill materially lengthens the life of drill bits and prevents "work hardening" of material when drilling such metals as stainless steel. Also excellent for wood boring.

Each

Model 244—Capacity in steel ¼ in., no-load speed 750 RPM, full load speed 450 RPM; 11¾ in. long over all; net wt. 5½ lbs., ship. wt. 7¼ lbs. $46.50

Note—500 or 1000 RPM optional.

¼ INCH HEAVY DUTY



With Lamb Wedge-Lock Handle, for Safer Handling

Built to aircraft industry specifications for ease of handling, compactness and light weight.

Ball bearings on armature and intermediate spindle; ball and needle bearings on chuck spindle. Double pole switch. Momentary contact with lock.

Each

No. 49—Capacity in steel ¼ in., no-load speed 1800 RPM; 7½ in. long over all; net wt. 3¾ lbs., ship. wt. 5½ lbs. $45.00

Slow Speed—550, 750 or 1000 RPM ....Add 6.00

⅜ INCH SPECIAL DUTY

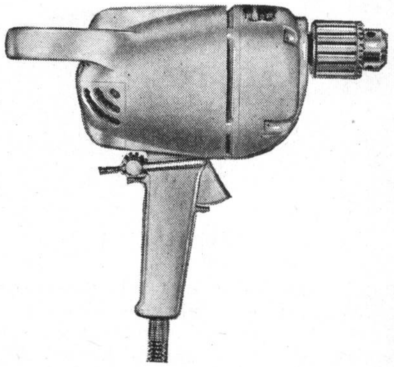
An excellent maintenance tool for drilling metal, wood and composition. For production work in light metals, and for intermittent drilling in structural members of all types.

Each

Model 260—Capacity in steel ⅜ in., no-load speed 750 RPM, full load speed 450 RPM; 12⅛ in. long over all; net wt. 6 lbs., ship wt. 7¾ lbs. $51.00

All above, one in a box.

⅜ INCH HEAVY DUTY



An extremely compact drill for heavy duty work. Excellent for production drilling up to ⅜ inch in steel and 1 inch in hardwood. Particularly adapted for close-quarter drilling.

Each

Model 64—Capacity in steel ⅜ in., no-load speed 750 RPM, full load speed 475 RPM; 11¼ in. long over all; net wt. 8 lbs., ship. wt. 10 lbs. $64.50

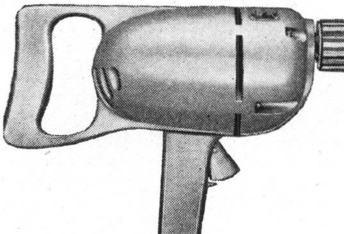
½ INCH STANDARD DUTY

Powered for production work. Its light weight and perfect balance make it easy to use in any position, just right for plant maintenance drilling. Compact, streamlined design enables it to get in spots where the usual ½ in. drill won't fit.

Each

Model 80—Capacity in steel ½ in., no-load speed 450 RPM, full load speed 300 RPM; 11½ in. long over all; net wt. 8 lbs., ship. wt. 10 lbs. $64.50

½ INCH SPECIAL DUTY



This drill has assumed leadership in the popular-priced field.

Ideal for all maintenance and construction drilling. Correctly designed to get into tight places. Can be used with hole saws.

Each

Model 281—Capacity in steel ½ in., no-load speed 450 RPM, full load speed 240 RPM; 12¾ in. long over all; net wt. 8¾ lbs., ship. wt. 10½ lbs. $48.50

All above, one in a box.

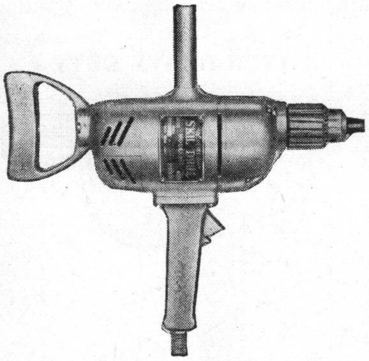
Note—All Skil Drills are available for 220, 250 and odd voltages at no extra cost. Specify voltage desired when ordering.

PORTABLE ELECTRIC DRILLS

SKIL DRILL

Universal Motor, 115 Volts AC or DC, Up to 60 Cycles

½ INCH HEAVY DUTY



Bridge builders, general contractors, plumbers and steel fabricators select this tool. Has tremendous power for its rated capacity. No. 1 or No. 2 Morse Taper Socket in place of geared chuck if desired.

Each

Model 283—Capacity in steel ½ in., no-load speed 550 RPM, full load speed 360 RPM, 16 in. long over all; net wt. 13⅝ lbs., ship. wt. 15⅛ lbs. $82.00

Model 351—Same as Model 283 except with reversing switch ... 94.50

Note—No-load speeds of 450 and 1000 RPM available, $5.00 extra.

⅝ INCH SPECIAL DUTY

For special duty drilling jobs in construction, plant maintenance and repair work. Used widely with ship augers for deep drilling in timbers. Handles hole saws up to 4⅛ inch diameter. No. 2 Morse Taper Socket in place of geared chuck if desired.

Each

Model 2101—Capacity in steel ⅝ in., no-load speed 250 RPM, full load speed 150 RPM, 18⅞ in. long over all; net wt. 18¾ lbs., ship. wt. 21 lbs. $76.50

Model 571—Same as Model 2101 except with reversing switch ... 88.50

¾ INCH SPECIAL DUTY

A favorite tool for construction crews. Adaptable to most maintenance and repair work in commercial and industrial structures of all types. No. 2 or No. 3 Morse Taper Socket in place of geared chuck if desired.

Each

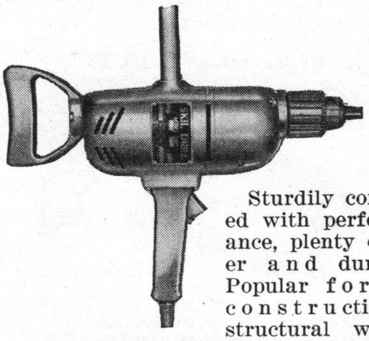
Model 2121—Capacity in steel ¾ in., no-load speed 250 RPM, full load speed 150 RPM, 19¼ in. long over all; net wt. 20¾ lbs., ship. wt. 23 lbs. $86.00

Model 573—Same as Model 2121 except with reversing switch ...100.00

Accessories for Skil Drills

Complete lines of Skil Drill accessories are available and include: Pressure Handles, Hole Saws, Carbon Cleaning Brushes, Valve Guide Brushes, Feed Screw Attachments, Chucks, Taper Arbors and Reducing Sleeves. For detailed information consult the general Skil Tools Catalog.

⅝ INCH HEAVY DUTY



Sturdily constructed with perfect balance, plenty of power and durability. Popular for heavy construction and structural work in all materials. No. 2 Morse Taper Socket in place of geared chuck if desired.

Each

Model 2103—Capacity in steel ⅝ in., no-load speed 450 RPM, full load speed 275 RPM, 19⅝ in. long over all; net wt. 25 lbs., ship. wt. 33 lbs. $105.00

Model 572—Same as Model 2103 except with reversing switch 117.00

¾ INCH HEAVY DUTY

Rugged in design; tremendous motor power, and durable mechanical construction.

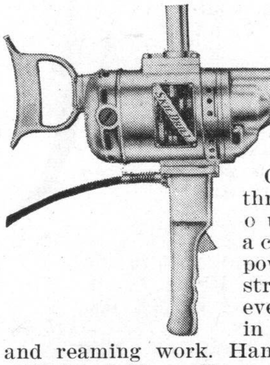
Proved in performance for machinery erection, railroad bridge and other major construction operations. Widely used for deep drilling in timbers. No. 2 or No. 3 Morse Taper Socket in place of geared chuck, if desired.

Each

Model 123—Capacity in steel ¾ in., no-load speed 375 RPM, full load speed 225 RPM, 20 in. long over all; net wt. 27 lbs., ship. wt. 35 lbs. $115.00

Model 332—Same as Model 123 except with reversing switch .. 129.00

1 INCH HEAVY DUTY



Completely new throughout. The outstanding achievement in powerful drill construction. Meets every requirement in toughest drilling and reaming work. Handles twist drills with No. 3 Morse Taper shanks.

Each

Model 163—Capacity in steel 1 in., no-load speed 375 RPM, full load speed 225 RPM, 18⅜ in. long over all; net wt. 25½ lbs., ship. wt. 39 lbs. $132.00

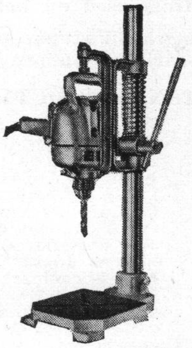
Model 443—Same as Model 163 except with reversing switch .. 145.00

Note—450 and 350 RPM optional; 1000 RPM $5.00 extra.

All above, one in a box.

ELECTRIC DRILL BENCH STANDS

FOR SKIL DRILLS



Quickly convert any Skil Drill into a stationary drill press.

These stands increase accuracy in drilling small parts. Provide a 20:1 or better leverage ratio to make hole cutting easier.

Drilling radius in table below is from center of column.

Specifications

Nos.	Vertical adj. of column, in.	Travel of drill head, in.	Drilling radius, in.	Lever ratio
6401	14	4	7	20:1
6402	14	4	7	20:1
6403	14	4	7	20:1
6404	14	4	7	20:1
4860	16	5	8	26:1
4870	16	5	8	26:1
9480	16	5	8	26:1
9490	16	5	8	26:1

Each

No. 6401—For Models 45 and 47 Skil Drills; wt. each 47 lbs. ...$29.50

No. 6402—For Models 241, 242, 243, 244, 250, 253 and 260 Skil Drills; wt. each 46 lbs. 29.50

No. 6403—For Models 64, 80 and 281 Skil Drills; wt. each 46 lbs. 29.50

No. 6404—For Models 63 and 83 Skil Drills; wt. each 48 lbs. .. 35.00

No. 4860—For Models 101 and 121 Skil Drills; wt. each 95 lbs. .. 44.00

No. 4870—For Models 103, 123, 143 and 163 Skil Drills; wt. each 95 lbs. 44.00

No. 9480—For Model 283 Skil Drill; wt. each 95 lbs. 44.00

No. 9490—For Models 2101, 2103 and 2121 Skil Drills; wt. each 95 lbs. 44.00

One in a box.

SKIL DRILL POST STAND BRACKETS

Converts Bench Stands into post drill stands.

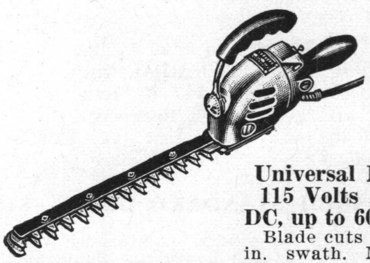
Per pair

No. 6435—Wt. per pair 7 lbs. $6.00

One pair in a box.

ELECTRIC HEDGE TRIMMERS

SKIL ELECTRIMMER



Universal Motor; 115 Volts AC or DC, up to 60 Cycles

Blade cuts a full 12 in. swath. Made of finest steel. Spring loaded to assure proper tension and compensate for wear.

Special alloy steel worm and bronze worm wheel, running in grease-sealed chamber, effects necessary speed reduction.

Single pole, built in toggle switch, located on motor frame.

Die-cast aluminum alloy frame for lightness and strength.

Equipment includes one 12 in. cutter blade; adapter for extension handle and 6 ft. rubber covered cord with two-prong connector.

Each

Model 512—24 in. long over all; net wt. 6 lbs., ship. wt. 9 lbs. $37.50

One in a box.

PORTABLE ELECTRIC SAWS

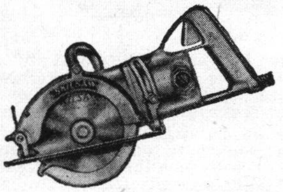
SKILSAW

Universal Motor, 115 Volts, AC or DC, Up to 60 Cycles

Die cast aluminum alloy body; highest quality radial and thrust bearings, alloy steel shafts and load bearing members; two-pole, momentary contact switch with 100% overload; one-place lubrication.

All models equipped with one combination saw blade, soft rubber covered cord, two prong connector, wrench, one tube of Skilsaw lubricant and steel carrying case.

MODEL 67



Cutting Capacity 1⅞ in. In Wood

A compact, powerful, heavy duty saw, ideal for the carpenter-builder on homes, garages and general remodeling. Rips and cuts hard wood up to 1 in., cross cuts dressed pine up to 2 in. Vertical base adjustment for depth of cut from ¾ in. to 1⅞ in. Tilts for bevel cuts; at 45° cuts through lumber 1 3/16 in. thick.

Each

Model 67—6 in. diam. blade, free speed of blade 3400 RPM, 15½ in. long over all; net wt. 12½ lbs., ship. wt. 20 lbs. $95.00

MODEL 77

Cutting Capacity 2⅜ in. In Wood

The greatest value in the 7¼ in. saw field. Quick adjustments for depth of cut and bevel-cutting. Saws faster on woods, metals, stone and compositions. Cross-cuts 2 in. rough lumber, bevel cuts 2 in. dressed lumber at 45°/0.

Each

Model 77—7¼ in. diam. blade, free speed of blade 3200 RPM, 17¼ in. long over all; net wt. 18 lbs., ship. wt. 35 lbs. $125.00

MODEL 825

Cutting Capacity 2⅝ in. In Wood

Lighter, easier-to-use on 2 in. rough lumber for sawing studs, rafters, joists. Bevel cuts lumber up to 2⅛ in. thick at 45°. Cuts aluminum and copper up to ½ in. thick.

Each

Model 825—8¼ in. diam. blade, free speed of blade 3000 RPM, 18 in. long over all; net wt. 19½ lbs., ship. wt. 40 lbs. $145.00

MODEL 87

Cutting Capacity 2⅞ in. In Wood

Designed especially for framing houses, school, factory and similar structures using much 2 in. rough lumber. Fast spindle increases efficiency. Cross-cuts 3 in. dressed lumber. Bevel cuts lumber up to 2⅜ in. at 45°.

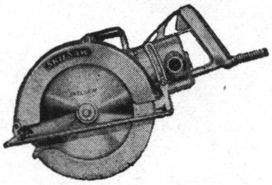
Each

Model 87—9 in. diam. blade, free speed of blade 3200 RPM, 19 in. long over all; net wt. 24½ lbs., ship. wt. 48 lbs. $165.00

All above, one in a box.

Note—Skilsaws can be furnished for 220, 250 and odd voltages at no extra cost; specify voltage desired.

MODEL 107



Cutting Capacity 3⅜ in. In Wood

A more powerful saw for cutting heavy timbers and for use on major construction such as building docks, ship-yards, etc. Excellent for difficult cutting and scoring operations in stone, tile, marble and concrete. Will rip and cross-cut timbers up to 3⅞ in. Bevel cuts lumber up to 2⅝ in. at 45°.

Each

Model 107—10 in. diam. blade, free speed of blade 2900 RPM, 21 in. long over all; net wt. 28 lbs., ship. wt. 60 lbs. $185.00

MODEL 127

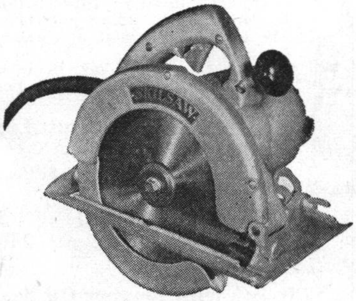
Cutting Capacity 4⅜ in. In Wood

The most powerful and fastest cutting portable electric handsaw made. Ideal for heavy construction work and timber cutting. Cuts ties in railroad maintenance work. Preferred for continuous cutting of copper sheets up to ⅝ in. thick, lead sheets up to 1 in. thick, and many heavy gauge metals. Will rip and cross-cut up to 4⅜ in., and bevel cut up to 3¼ in. at 45°.

Each

Model 127—12 in. diam. blade, free speed of blade 2400 RPM, 22 in. long over all; net wt. 32½ lbs., ship. wt. 65 lbs. $220.00

MODEL 800



Cutting Capacity 2⅝ in. In Wood

Ideal for fast cutting in stone, tile and marble as well as lumber. Has many features not found in other saws of similar construction. Perfect balance for easy, one-hand operation. Tilts for bevel cutting 2⅛ in. lumber at 45°.

Each

Model 800—8¼ in. diam. blade, free speed of blade 6000 RPM, 12½ in. long over all; net wt. 21 lbs., ship. wt. 42 lbs. $145.00

All above, one in a box.

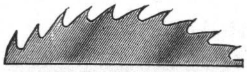
SAW BLADES

SKILSAW

Crucible Steel

Uniformly tempered and tensioned, of the proper gauge to hold the set; correctly shaped teeth.

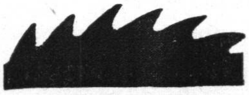
Diamond arbor on all Skilsaw models is the same size, making blades interchangeable.



Combination

A blade designed for all around work; the most popular blade.

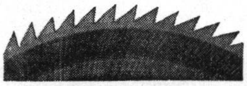
Nos.	Each	Diam., in.	Nos.	Each	Diam., in.
376	$3.45	6	379	$5.45	9
377	4.25	7¼	380	5.75	10
378	4.65	8	382	7.45	12
388	4.95	8¼			



Rip

The fastest blade for rough work.

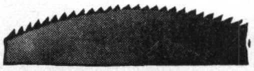
No.	Each	Diam., in.	No.	Each	Diam., in.
9764	$5.75	10	330	$8.25	12



Cross-Cut

For all cross-cut work. Also recommended for use as a combination blade in hardwoods.

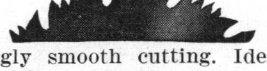
Nos.	Each	Diam., in.	Nos.	Each	Diam., in.
9752	$3.45	6	357	$5.45	9
356	4.25	7¼	9763	5.75	10
293	2.85	8	334	8.25	12
350	4.95	8¼			



Fine Tooth

For soft wallboard bone and other fine materials dry enough so that teeth will not fill.

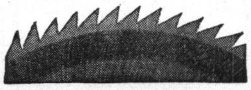
Nos.	Each	Diam., in.	Nos.	Each	Diam., in.
280	$3.75	6	9744	$5.25	8
366	5.25	7¼	361	5.75	9



Mitre

A blade for exceedingly smooth cutting. Ideal for interior finish.

Nos.	Each	Diam., in.	Nos.	Each	Diam., in.
314	$6.30	6	363	$9.30	9
362	7.00	7¼	9758	10.50	10
9757	7.70	8			



Flooring

A specially tempered blade for repairing old floors where nails are encountered. Use a blade an inch or two smaller than the maximum size Skilsaw will take.

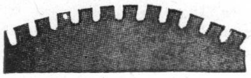
Nos.	Each	Diam., in.	Nos.	Each	Diam., in.
9775	$3.95	6	359	$6.75	9
358	4.75	7¼	349	7.00	10
348	5.75	8			

All above, open stock.

SAW BLADES

SKILSAW

Crucible Steel



Friction

For cutting light gauge flat or corrugated sheets of iron, such as metal roofing. Use only with Model 77 or larger saws.

Nos.	Each	Diam., in.
9768	$6.50	6
9769	9.00	8

Metal Slitting

For cutting non-ferrous metals such as sheet and tube copper, brass and aluminum.

Each

No. 9813—7 in. diam., for aluminum . $8.50

No. 9814—7 in. diam., for copper and brass 8.50

Groover

For dado and plough operations. Groover blades up to ⅜ in. width may be used on Models 77, 825, 800 and 87, and up to ½ in. on Models 107 and 127. To use wider blades on Skilsaws, the left hand side of their bases should be cut away. With diamond arbor. 5½ in. diameter.

Nos.	Each	Width, in.	Nos.	Each	Width, in.
300	$7.75	⅛	**9747**	$8.80	½
9748	7.25	3/16	**9759**	9.95	¾
9745	7.60	¼	**9751**	9.95	13/16
9746	8.20	⅜			

SKILSAW DIAMOND-GRIT METAL

SKILSAW DIAMOND-GRIT BLADE
SKILSAW DIAMOND-GRIT BLADE
SKILSAW DIAMOND-GRIT BLADE
SKILSAW DIAMOND-GRIT BLADE

For Faster Cutting of All Masonry Products

Embedded diamond grit gives this blade a faster-working, longer-lasting edge that cuts brick, concrete, glass, tile, marble and all asbestos cement products cleaner, smoother and without dust. Outlasts abrasive discs 5 to 1.

Eliminates need of frequent adjustment of saw base when doing scoring work. Shatterproof, no danger of flying pieces of abrasive. Must be used with water feed attachment.

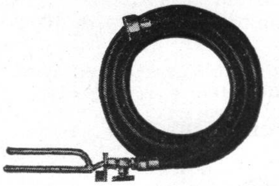
Nos.	Each	Diam., in.	Thick., in.	Fits Skilsaw, Nos.
340	$12.75	7	.040	77
* **341**	17.00	7	.050	77
9773	22.00	7	.064	77
9774	15.50	8	.040	800, 825
* **344**	18.00	8	.050	800, 825
345	20.00	8	.064	800, 825
370	15.50	9	.040	87
371	18.50	9	.050	87
* **372**	23.00	9	.064	87
373	14.00	10	.040	107, 127
374	20.00	10	.050	107, 127
* **375**	25.00	10	.064	107, 127

*General-use blades carried in stock; other blades available on special order.

All above, open stock.

WATER FEED ATTACHMENTS

SKILSAW



For Use with Diamond-Grit Metal Blades

Easily attached to any current model Skilsaw. The perforated fork supplies water to both sides of blade.

Equipped with 10 ft. of hose with standard connection for attaching to faucet or extension water hose.

Each

No. 5750—For all Skilsaws except Model 800; wt. each 2 lbs. $9.50

No. 5748—For Model 800 saws 9.50

One in a box.

ADJUSTABLE RIP FENCES

SKILSAW

To save repeated measuring and marking adjustable rip fence fits on front of base; guides saw accurately to rip wood to uniform width.

Each

No. 9726—Length of adjustment 2½ in.; for Models 67, E, S and J; wt. each ¼ lb. $0.75

Length of Adjustment 6 in.

For Models 77, 825, 800, 87, 127 and 107.

Each

No. 1880—For old style models $1.85

No. 154—For new models 1.75

Weight each ¼ pound.

One in a box.

Note—Specify model and serial number of saw when ordering.

SKIL-TOOL LUBRICANTS

SKILSAW

ILSA
LUBRICANT

Insures positive lubrication under severe operating conditions to the high speed bearings and gears of Skilsaws.

This lubricant has been developed after long research especially for Ski-Tools.

For Skilsaws without Leather Oil Seals

Also for belt type Skilsanders Models A and B.

Nos.	222	221	223
Size	½ lb. tube	2 lb. can	5 lb. can
Each	$0.70	1.75	3.50

For Skilsaws with Leather Oil Seals

Also for worm gear case of belt type Skilsanders.

Nos.	249	264	267
Size can ...	8 oz.	1 pt.	½ gal.
Each	$0.60	1.00	3.00

For Other Skil Tools

Aerial grinders, shears, nibblers, disc sanders, drills, and chain case of belt sanders.

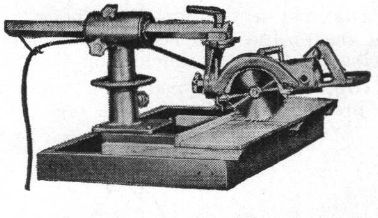
Nos.	252	251	9742
Size	½ lb. tube	2 lb. can	5 lb. can
Each	$0.70	1.70	3.25

Open stock.

Note—Be sure to specify type, model and serial number of tool when ordering lubricant.

RADIAL SAW SUPPORTS

SKILSAW



Skilsaw is quickly attached to arm, enabling operator to make the following cuts quickly and easily; cut off, rip, bevel cut-off, bevel rip, miter, bevel miter, dado or plough.

Arm is 1¾ in. diam. polished and hardened steel bar; rolls between 8 ball bearings. Base is made of 4 in. channel steel, ¾x8½x40 in.; finished table securely bolted to base. 3 in. diam. cast column, adjusts vertically. Sturdy cast bracket with adapter assembly. Oversize lock lever and knobs for quick convenient adjustments.

22½ in. max. arm extension, 9¾ in. max. vertical adjustment. Radial range, 90°, 45° right or left; bevel capacity 0° to 45°.

Finished in beige and green.

Each

Model 464—For saw Models 77, 825, and 87 ....$159.50

Model 467—For saw Model 800 .. 159.50

Net weight 205 pounds; shipping weight 250 pounds.

One in a box.

EXTENSION CORDS

SKILSAW HEAVY DUTY

Made of heavy duty flexible stranded copper, and rubber covered.

Skilsaws require cords of sufficient gauge size to prevent harmful drop in voltage when tool is under load.

Nos.	Each	Length, ft.	Gauge, Nos.	Wt. ea., lbs.
2-Conductor Cords with Standard Connectors				
203	$12.50	50	14	8
206	20.50	100	14	16
201	16.25	50	12	11
207	28.50	100	12	22
204	37.50	100	10	36
3-Conductor Cords Less Connectors				
432	$12.50	50	14	15
433	24.50	100	14	30
434	16.00	50	12	18
435	28.75	100	12	36
436	37.50	100	10	42

Standard Connectors, Armored

Each

No. 9732—Male, straight, 2 prong ..$0.60

No. 9739—Female, straight, 2 cavity 1.00

No. 257—Male, straight, 3 prong .. 1.00

No. 259—Female, straight, 3 cavity 1.65

Twist Lock Connectors, Armored

Each

No. 233—Male, 2 prong $0.75

No. 234—Female, 2 cavity 1.35

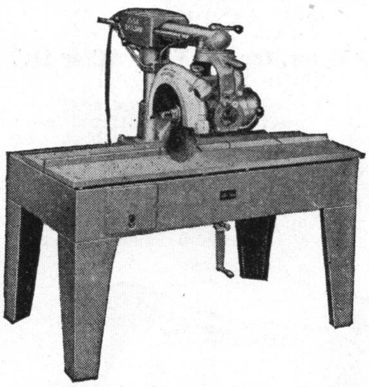
No. 430—Male, 3 prong 1.90

No. 431—Female, 3 cavity 2.75

Open stock.

RADIAL SAWS

SKILSAW ELECTRIC, MODEL 450



Features

All mechanical and electrical controls are accessible from front.

Sawing head glides on retractable arm for finger-tip operation.

Supporting arm bearings are adjustable for precise alignment.

Larger work table has adjustable fence for maximum cut-off capacity.

Heavier supporting column gives maximum rigidity.

One-piece saw guard is quickly removable.

Table leveling screws are simple to adjust.

Larger, easy-to-read scales enable quick adjustments.

Plenty of set-up room provided by retractable arm.

Patented contour grip handle is comfortable for day-long use.

Specifications

Maximum cut-off capacity:
3$\frac{3}{16}$x16½ in. with 14 in. blade.
3⅝x16½ in. with 16 in. blade. Depth of cut may be increased to 4½ in. by placing ½ in. strip in front of fence.
Maximum vertical miter capacity:
3$\frac{3}{16}$x11¾ in. with 14 in. blade.
3½x11¾ in. with 16 in. blade. Depth of cut may be increased to 4½ in. by placing ½ in. strip in front of fence.
Maximum compound miter capacity at 45°:
2¾x7 in. with 14 in. blade.
3½x7 in. with 16 in. blade.
Maximum rip width:
25¼ in. fence in rear position.
Depth of work table:
11¼ in. fence may be moved back 2 in. to increase depth to 13¼ in. if desired.
Size of frame:
4 ft. 4½ in. long, 2 ft. 6½ in. wide, 2 ft. 8 in. high.
Arbor hole: 1 in. diameter.
Dado capacity: 1½ in.
Max. floor space required: 4½x5 ft.
Net wt. each: 475 lbs.
Shipping wt. each: 650 lbs.

Nos.	Each	HP	Cycle	Blade diam., in.	Nos.	Each	HP	Cycle	Blade diam., in.
1 Phase, 115/230 Volts, Manual Control									
45001	$490.00	2	60	14	**45007**	$550.00	3	60	16
45025	490.00	2	50	14	**45026**	550.00	3	50	16
1 Phase, 115/230 Volts, Magnetic Control									
45003	$520.00	2	60	14	**45005**	$580.00	3	60	16
45004	520.00	2	50	14	**45006**	580.00	3	50	16
3 Phase, *220 Volts, Manual Control									
45007	$470.00	2	60	14	**45028**	$510.00	3	50	16
45027	470.00	2	50	14	**45009**	570.00	5	60	16
45008	510.00	3	60	16	**45029**	570.00	5	50	16
3 Phase, 550 Volts, Manual Control									
45010	$480.00	2	60	14	**45031**	$520.00	3	50	16
45030	480.00	2	50	14	**45012**	580.00	5	60	16
45011	520.00	3	60	16	**45032**	580.00	5	50	16
3 Phase, *220 Volts, Magnetic Control									
45013	$500.00	2	60	14	**45016**	$540.00	3	50	16
45014	500.00	2	50	14	**45017**	600.00	5	60	16
45015	540.00	3	60	16	**45018**	600.00	5	50	16
3 Phase, 550 Volts, Magnetic Control									
45019	$510.00	2	60	14	**45022**	$550.00	3	50	16
45020	510.00	2	50	14	**45023**	610.00	5	60	16
45021	550.00	3	60	16	**45024**	610.00	5	50	16

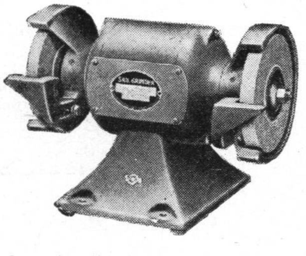
One in a box.

*Also available for 440 volts; specify 440 volts in addition to number when ordering.

Note—2-phase, 3-wire, and 2-phase, 4-wire Skil Radial Saws are available on special order. These models can be furnished in 2, 3 or 5 HP, 50/60 cycle, 220/440 or 550 volts; with manual or magnetic control.

ELECTRIC BENCH GRINDERS

SKIL GRINDER



Incorporate the latest in motor construction for best performance under heavy loads. The ¼ and ⅓ HP models feature totally enclosed, split phase motors. The ½ and 1 HP models have totally enclosed, capacitor-start, induction run, low starting current type motors.

All models equipped with one fine and one medium grade wheel; 10 ft. of 3-conductor cord (except 3-phase); "on" and "off" type, heavy-duty switch. Black crackle finish.

6 Inch, ¼ Horsepower

No load speed 3450 RPM at 60 cycles, 2850 RPM at 50 cycles. 6x⅝x½ in. bore wheels.

Each

Model 561—115 volts AC, 50/60 cycles, single phase; net wt. 30 lbs.; shipping wt. 48 lbs. $40.50

6 Inch, ⅓ Horsepower

No load speed 3450 RPM at 60 cycles AC or on DC. 2850 RPM at 50 cycles. 6x¾x½ in. bore wheels.

Each

Model 562—115 volts AC, 50/60 cycles, single phase; net wt. 40 lbs.; shipping wt. 50 lbs. $54.50
Model 567—115 volts DC (230 volts at no extra cost) 86.00

7 Inch, ½ Horsepower

No load speed 3450 RPM at 60 cycles AC or on DC. 2850 RPM at 50 cycles. 7x1x⅝ in. bore wheels.

Each

Model 22—115 volts AC, 50/60 cycles, single phase; net wt. 60 lbs.; shipping wt. 70 lbs. ....$ 88.00
Model 23—115 volts DC (230 volts at no extra cost) 109.00

10 Inch, 1 Horsepower

No load speed 1725 RPM at 60 cycles. 10x1x¾ in. bore wheels.

Each

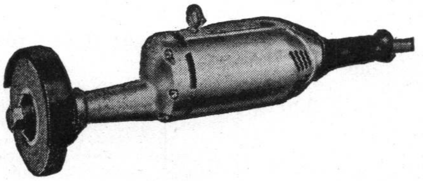
Model 34—110 volts AC, 50/60 cycles, single phase; net wt. 145 lbs.; shipping wt. 180 lbs. $139.50

One in a box.

Note—¼, ⅓ and ½ HP models available in 230 volts, single phase at no extra charge; all models available in 220, 240 or 550 volts, 50/60 cycles, 3-phase at no extra charge.

PORTABLE ELECTRIC GRINDERS

SKIL AERIAL TYPE



Universal Motor, For 115 Volts, AC or DC, Up to 60 Cycles

Die cast aluminum alloy body for maximum strength and minimum weight. 100% ball bearing construction throughout. Straight line ventilation.

Powerful, sturdily constructed tools for maximum performance on all grinding, wire brushing, buffing and polishing of metal surfaces.

Rubber sleeve on rear grip handle.

Equipped with 10 ft. of 3-conductor cord and connector; adjustable steel wheel guard; one medium grade wheel; suspension eye bolt.

Each

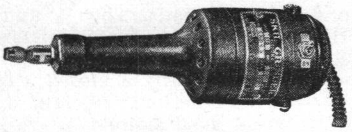
Model 15—4x¾x½ in. bore wheel, no-load speed 5250 RPM, 22 in. long over all; net wt. 15 lbs.; shipping wt. 18 lbs. ....$ 77.50
Model 16—5x¾x½ in. bore wheel, no-load speed 4500 RPM, 22⅝ in. long over all; net wt. 18 lbs.; shipping wt. 23 lbs. 88.00
Model 142—Heavy-Duty, 6x1x⅝ in. bore wheel, no-load speed 3800 RPM, 23½ in. long over all; net wt. 19½ lbs.; shipping wt. 25 lbs. 110.00

One in a box.

Note—Available for 220, 250 and odd voltages at no extra cost.

PORTABLE ELECTRIC GRINDERS

SKIL-GRINDER



Universal Motor, for 115 Volts AC or DC, Up to 60 Cycles

Suited for grinding small openings, finishing irregular molds, lapping dies or spark testing steel.

Standard equipment includes three mounted wheels, ⅝x⅛x⅛ in., ½x½x⅛ in. and ⅞x⅛x⅛ in.; one rubber arbor, ¾x½ in.; 3 abrasive bands; ⅛ in. capacity chuck; 2 wrenches; 1 filter cap.

Each

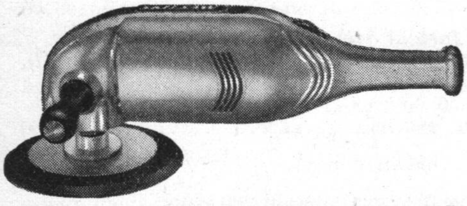
Model 310—No-load speed 22,000 RPM, 9¾ in. long over all; net wt. 2 15/16 lbs., ship. wt. 4 lbs. ...$29.75

Model 322—Same as Model 310 but with ⅛ in. capacity Jacobs chuck 34.50

For 220 volts ....Add 2.00

PORTABLE ELECTRIC SANDERS

SKIL-SANDER



Universal Motor, for 115 Volts AC or DC, Up to 60 Cycles

Eliminates slow, costly hand grinding, sanding and filing. Used on flat, concave and convex surfaces of metal, wood, stone and compositions with grinding wheels, wire brushes, sanding discs, etc.

7 in. Special Duty

For smoothing fracture welds in cast metals. With wire wheel brushes, it removes rust and dirt from metal surfaces. Equipped with cord and plug, detachable side handle, tool rest, 3 assorted discs, wrench.

Each

Model 12—7 in. pad, no-load speed 4400 RPM; 15¾ in. long; net wt. 10½ lbs., ship. wt. 15½ lbs. $69.50

7 in. Heavy Duty

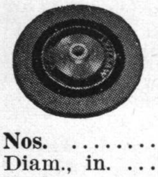
A powerful tool for tough sanding, cleaning or grinding on intermittent production or repair jobs. Equipped with cord and plug, detachable side handle, tool rest. Three assorted discs, wrench.

Each

Model 11—7 in. pad, no-load speed 4200 RPM; 16¾ in. long; net wt. 12½ lbs., ship. wt. 18½ lbs. $81.50

All above, one in a box.

SKIL-SANDER PADS



Have an added resilience for faster sanding and perfect feather edging.

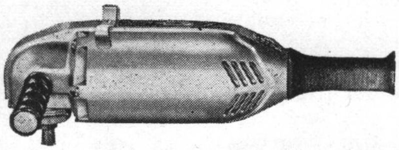
Nos. 4660 and 4773 are molded sisal; No. 4675 is rubber.

Nos.	4660	4675	4773
Diam., in.	5	7	9
Each	$3.00	3.25	5.50

Open stock.

COMBINATION SANDER-GRINDERS

SKIL-SANDER



Universal Motor, for 115 Volts AC or DC, Up to 60 Cycles

Powerfully built for the toughest sanding, grinding and surfacing work. Large 9 in. sanding discs may be trimmed for re-use with 7 in. sanding pad.

Equipped with 10 ft. of 3-conductor rubber covered cord; right or left side handle; suspension eye bolt, tool rest; 9 in. sanding pad; 3 assorted grit sanding discs; wrench.

Each

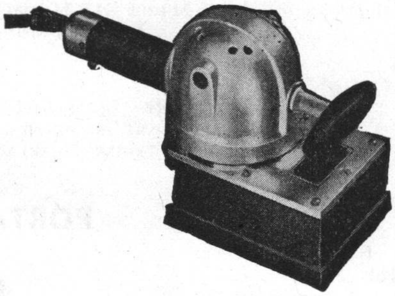
Model 540—No-load speed 4200 RPM; 18 in. long over all; net wt. 15 lbs., shipping wt. 20 lbs. $97.50

Model 13—Same as Model 540 but power unit only; without sanding pad and discs 92.50

One in a box.

PORTABLE ELECTRIC OSCILLATING SANDERS

SKIL-SANDER



Universal Motor, for 115 Volts AC or DC, Up to 60 Cycles

Speeds final sanding and rubbing operations on wood, metal or composition. Oversize motor gives this tool exceptional cutting power. All gearing is eliminated through Skil Sander's exclusive design. This assures near-silent operation and negligible maintenance.

Sandpaper is applied either by cementing to vibrating head or by metal holder as shown in picture. Comes equipped with 3 assorted sheets of 4½x5½ in. sandpaper to be applied with cement; one 4 oz. bottle of sandpaper cement; 3 assorted sheets of sandpaper 6½x 4½ in. (3 may be cut from standard 9x11 in. sheet) to be applied with metal clamp device; one metal clamp; necessary instructions for both methods of applying paper. Also equipped with 10 ft. of rubber covered cord.

Each

Model 438—4½x5½ in. abrading surface, uses ¼ standard size sheet of sandpaper; net wt. 7½ lbs.; ship. wt. 10 lbs. $87.50

One in a box.

Special Pads

	Each
No. 4716—Sponge rubber pad	$0.50
No. 4715—Felt rubber pad	.50
No. 4709—Lamb's wool bonnet	2.50

Open stock.

PORTABLE ELECTRIC BELT SANDERS

SKIL-SANDER

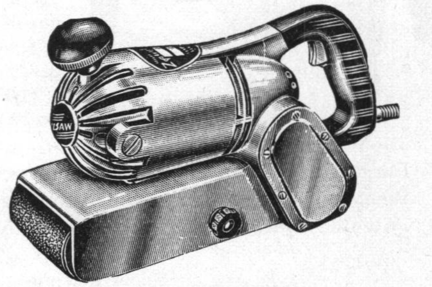
Universal Motor, for 115 Volts AC or DC, Up to 60 Cycles

Eliminate slow costly hand sanding.

Heavy-duty motor insures continual even flow of power. Perfect balance and high belt speed prevent ripples and ridges on work either with or across the grain.

Die cast aluminum alloy frame; non-friction bearings throughout; efficient ventilating fan.

All models equipped with sanding pad, cord and connector; medium grade belt, and lubricant.



3 in. Wide Belt

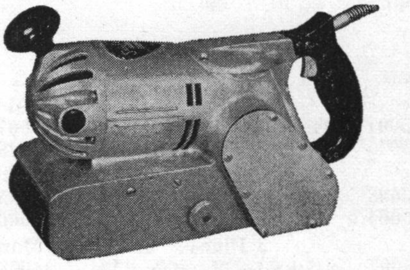
Developed especially for small wood-working and cabinet shops, manual training classrooms and general maintenance shops in industrial plants. Perfectly balanced to exert uniform pressure over entire sanding surface.

"Touch-control" lever for quick, easy belt changing. Knob handle can be moved from top to nose of sander for easy vertical sanding. Safety switch prevents accidental starting. Right side flush for sanding to upright objects.

Each

Model 448—4¼x15¼x8 in. high, belt speed 1200 ft. per minute; net wt. 15¾ lbs., ship wt. 20 lbs. $115.00

Model 449—Same as Model 448 with vacuum dust collector; net wt. 16 lbs., ship. wt. 20½ lbs. 142.50



4½ in. Wide Belt

A production tool throughout. Handles all types of sanding work on woods, metals, stone and composition.

Belts quickly changed by "touch-control" lever. Belt easily centered even while running by simple adjustment of small control knob. Right side of machine flush with edge of sand belt for surfacing close to upright objects. Safety switch prevents accidental starting.

Each

Model 323—6x15¾x9¼ in. high, belt speed 1300 ft. per minute; net wt. 24½ lbs., ship. wt. 35 lbs. $150.00

All above, one in a box.

Note—Other votages available.

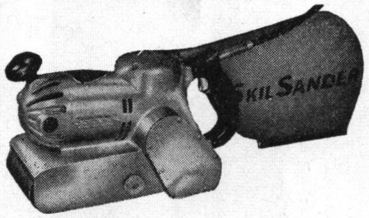
Sanding Belts—Sanding Discs Sandpapers

Grinding Wheels—Wire Cup Brushes Refer to Index

PORTABLE ELECTRIC BELT SANDERS

SKIL SANDER

Universal Motor, for 115 Volts, AC or DC, Up to 60 Cycles



4½ in. Wide Belt; with Vacuum Dust Collector

For use where dust and dirt created in sanding are objectionable. Has all the construction features of Model 323 (preceding page) plus an efficient dust collecting system that picks up sanding dust and discharges it into the cloth bag.

Sanding and painting or varnishing can be done in the same room without danger of damaging fresh finishes. Also prevents "loading" of belts, insuring faster cutting and longer belt life.

The vacuum system combines efficient design with fewest possible parts for long, trouble-free performance.

Each

Model 324—6x15¾x9¼ in. high exclusive of bag, belt speed 1300 ft. per minute; net wt. 26 lbs., ship. wt. 46 lbs...$178.00

ELECTRIC FLOOR SANDERS

DRUM TYPE SKIL-SANDER

SKIL SANDER

Universal, 6-Pole, Ball Bearing Motor; 115 Volts, AC or DC, Up to 60 Cycles

Because of its exceptional power, efficiency, compactness and handling ease, this new machine will finish more square feet of fine sanding easier, faster and at a lower cost than ever before.

One-piece steel frame. Dynamically balanced drum, 6 in. diameter, 8 in. wide; felt pad. Polished steel casters with oilless bearings sealed against dust and dirt. Handle is aluminum tubing; adjustable to operator's height, with interchangeable 3-position grips. Highly efficient vacuum system, with removable cover for easy cleaning. Automatic lift raises and lowers drum at wall, giving perfectly tapered cut at wall automatically.

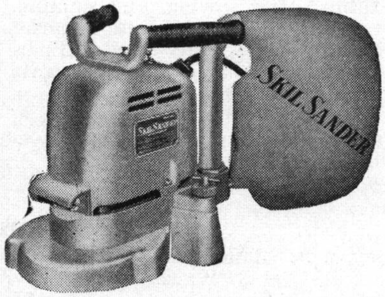
Single V-belt drive operates drum and fan. Six full-seal ball bearings (2 on drum, 2 on motor, 2 on fan); never requires lubrication. Two-pole fully enclosed switch; 100% over-load capacity.

Complete with cord and plug.

Each

Model 301—13⅝ in. high, 15¼ in. long, 11⅜ in. wide; motor free speed 6000 RPM, drum free speed 4000 RPM; wt. complete 86 lbs. $325.00

DISC TYPE EDGER SKIL SANDER



Twin-Motors, 115 Volts, AC or DC, Up to 60 Cycles

One motor drives the sanding disc and a second motor drives the dust pick-up fan at full speed constantly and picks up all dust regardless of load on sanding motor. Separate switch permits sanding without fan when working on wet varnish.

Easy-to-change discs; adjustable casters for uneven floors; illumination for dark corners. 7 in. disc diameter, ⅞ in. hole.

Equipped with 25 ft. of detachable cord, 25 discs of assorted grits, and wrench.

Each

Model 10—13 in. high, 13 in. long, 10 in. wide; net wt. 26½ lbs., ship. wt. 35 lbs. $175.00

All above, one in a box.

Note—Refer to index for sanding belts and discs.

PORTABLE ELECTRIC SHEARS

SKIL SHEAR

Universal Motor, for 115 Volts, AC or DC, Up to 60 Cycles

Designed and amply powered for easy, accurate cutting of hot rolled steel or galvanized iron up to 16 gauge and other materials in proportion.

Lighter, more compact than any other shear of equal capacity.

Equipped with 3-conductor cord with connector, set of Skil-shear blades, and wrenches.

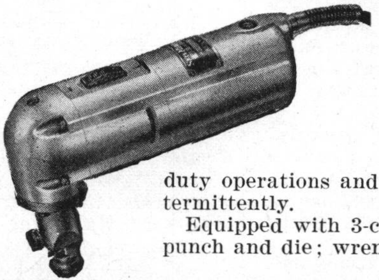
Each

Model 17—Minimum cutting radius 1 in., 9 in. long over all; net wt. 5½ lbs.; shipping wt. 6¼ lbs. $91.00

No. 4076—Replacement vertical moving blade 1.50

No. 4078—Replacement stationary blade 1.25

SKIL NIBBLER



Universal Motor, for 115 Volts AC or DC, Up to 60 Cycles

Operates on a rapid-fire punching principle. Powerbuilt for easy cutting of hot rolled steel or galvanized iron up to 16 gauge on constant duty operations and up to 14 gauge when used intermittently.

Equipped with 3-conductor cord with connector; punch and die; wrenches.

Each

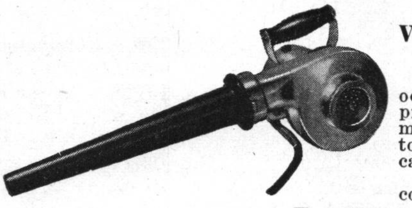
Model 18—Minimum cutting radius 1 in.; 9 in. long over all; net wt. 5 lbs.; shipping wt. 5¾ lbs. $108.00

No. 4013—Replacement punch 3.50

No. 4014—Replacement die 3.50

PORTABLE ELECTRIC BLOWERS

SKIL BLOWERS



Universal Motor, for 115 Volts, AC or DC, Up to 60 Cycles

Deliver dry air at high velocity and comparatively low pressure and are the safest method known for cleaning motors, generators and other delicate equipment.

All models equipped with 3-conductor cord and plug.

Two-Speed

A 1 HP 2-speed blower that can be used for every kind of blowing work in the plant. Provides the utility of two blowers in one all-purpose tool.

Each

Model 29—Delivers 26,000 or 20,000 ft. per minute; wt. each 14½ lbs. $93.50

Heavy Duty

Most popular blower built. Ideal for countless jobs.

Each

Model 26—Delivers 20,000 ft. per minute; wt. each 9½ lbs..$71.50

Special Duty

Delivers blast of either warm air or cold air by flicking a switch. Practical for all industries having moisture control problems.

Each

Model 27—Delivers 11,000 ft. per minute; wt. each 8 lbs. ..$65.00

Standard Duty

Develops sufficient power to blow all dust out of machinery and general shop equipment.

Each

Model 25—Delivers 17,000 ft. per minute; wt. each 7½ lbs..$54.50

Light Duty

For practical operation about the small shop and intermittent service in the industrial plant.

Each

Model 28—Delivers 12,000 ft. per minute; wt. each 7 lbs...$43.50

All above, one in a box.

SKIL BLOWER STANDARD SUCTION ATTACHMENTS

Convert Blower to Suction Cleaners

Set includes dust bag, 7 ft. hose, hose connection, furniture nozzle with brush, flat cleaning tool, brush, and Sam Brown type belt.

Per set

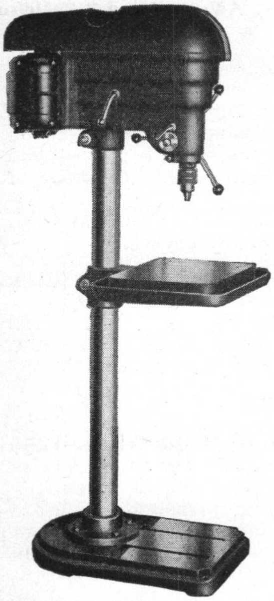
No. 2858—For Models 26, 25 and 28; wt. set 5 lbs......$14.50

No. 9753—For Model 29; wt. set 6 lbs. 15.00

One set in a box.

POWER TOOLS

BOICE-CRANE HELMET HEAD DRILL PRESSES



Endorsed by Industry

Series 2600 Boice-Crane Drill Presses have a reputation in industry for unusual precision, wider work range and more capacity. These factors have influenced hundreds of leading makers of precision products to choose them for producing instruments, aircraft and ordnance devices.

5 speeds, 25% greater range. An efficient speed for every job. Hinged motor bracket and easy opening hinged guard makes speed changes easy.

A rugged steel drive sleeve carries pulley without imparting belt strain to spindle. Drives spindle by 6 tooth spline.

2 1/16 in. oversize quill built for larger jobs and long wearing.

Exceptionally smooth and accurate work table.

Specifications—All Models

Drill to center of circle ....15 in. dia.
Drilling capacity, maximum ⅝ in. in cast iron
Tapping capacity, maximum ½ in. in brass
Spindle Travel ....4 in.
Chuck, Std. Equipment O-½ in. Jacobs ⅛ in. to ⅝ in. Jacobs available at slight extra cost
Standard tilting table ....10x11 in.
Production table, ground area ....11x16 in.
Bench base, ground surface ....10x10 in.
Floor base, ground surface ....10x14 in.
Columns, 2¾ in. dia. x 3/16 in. thick wall; centerless ground for extreme accuracy when relocating head or table.

Bearings—4 Life-Grease-Sealed New Departure Bearings. Positive lubrication regardless of head position.

Note—All 2 M.T. Spindle Models have two-row ball bearing in bottom spindle position. This heavy duty bearings will handle far greater thrust loads.

1-Spindle Models

	Bench	Floor
Height overall, in.	42	71
Clearance chuck to table, in.	10½	39½
Clearance chuck to base, in.	17½	46½

Multiple Spindle Models

Overall Height—bench models 44⅝ in.; floor 78⅝ in.; work tables—2-spindle, 27x23 in. over all, 24x15⅜ in. ground surface; 3-spindle, 39x23 in. over all, 36x15⅜ in. ground surface; 4-spindle, 51x23 in. over all, 48x15⅜ in. ground surface. Clearance to table—from chuck nose on taper shank spindle type—27 in. Morse Taper Socket Spindle type—25 in. Standard Models have columns mounted on 12 in. centers.

Available on Special Order—1-spindle machine on 2-spindle work table; 2-spindle on 3-spindle work table with columns on 24 in. (or closer) centers; or, 3-spindle on a 4-spindle work table with columns on 18 in. (or closer) centers.

Note—Available in High-Speed and Slow-Speed models, single spindle and multiple spindle; bench or floor type, with standard tilt table or production table.

Prices on Request.

BOICE-CRANE FRICTION-MATIC WET TOOL AND KNIFE GRINDERS

BOICE-CRANE
TOLEDO, OHIO

Simplified self-adjusting friction roll drive. Peripheral speed remains constant as wheel wears; reduction in diameter is automatically compensated for by stop up in wheel rim speed.

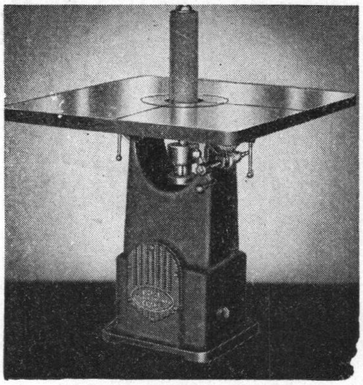
The "controlled water action" prevents water being thrown on the operator. The large 2½x5 in. tool rest can be positioned for proper pressure control and accurate control for grinding angles from 0 to 30°.

Gray enamel finished seamless steel case with interior of tank finished in baked enamel to resist rust. Four convenient mounting holes in feet.

8 in. diam. by 1½ in. face natural quarried sandstone. Speed 135 RPM, increasing as wheel wears to maintain a peripheral speed of approximately 280 ft. per minute. Stainless steel shaft.

	Each
No. 200 — Complete; shipping wt. each 17 lbs.	$16.50
No. 1012½—Motor pulley, 2½ in. diam., ½ in. bore, for ¼ HP motor; ship. wt. each 8 oz.	.55
No. 1030—V-belt; shipping wt. each 10 oz.	.95
No. 201—Aloxite wheel dressing stick, 6x1x1 in.; shipping wt. each 1 lb.	.90

BOICE-CRANE SPINDLE SANDERS



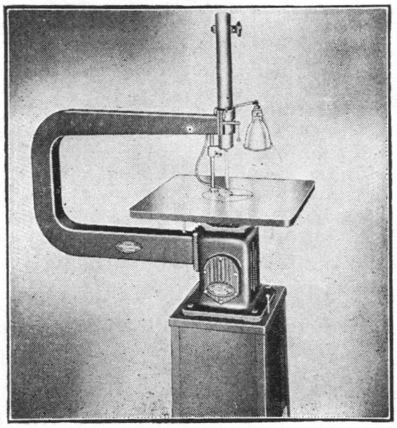
With Oscillating Spindle

Sands wood or metal, straight edges or surfaces, any length curved edge, convex or concave. Sands any degree of bevel on curved or straight work up to 6 in. in height, any length. Sands inside of holes over 1 in. diameter.

Sand drum oscillates automatically through ⅞ in. long stroke—83 complete strokes at 2500 revolutions per minute. Always sands silky smooth even with the coarsest abrasives. Positive, super lubrication.

	Each
No. 2000—Complete with ¾ and 2 in. diam. abrasive sleeves, 2 in. diam. rubber drum, 2 table rings, expanding collars and V-pulley for belt drive; shipping wt. each 143 lbs.	$150.00
No. 1012½—V-pulley, 2½ in. diam., for motor, shipping wt. each 8 oz.	.55
No. 1034—V-belt, 34 in. circumference; shipping wt. each 8 oz.	1.10
No. 1755—Motor, ⅓ HP, 110 volt, 60 cycle, rep-ind., ball bearing, with built-in switch; shipping wt. each 34 lbs.	42.50
No. 2005—Steel stand with switch rod and belt guard; shipping wt. each 65 lbs.	25.50
No. 2006—Complete spindle sander, on stand, as itemized above; shipping wt. each 240 lbs.	219.65

BOICE-CRANE JIG SAWS



For Light Scroll Work to Heavy Jig Sawing

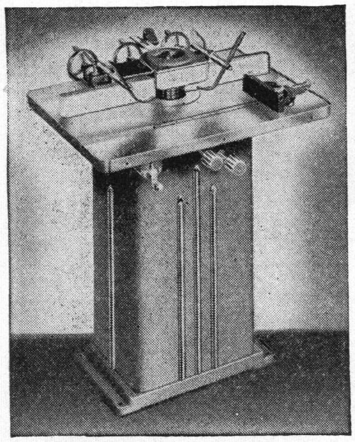
Also does die-filing, saber sawing, and sanding. Big capacity; cuts two thicknesses of 2 in. material or 16 pieces of ¼ in. stock in exact duplicate pattern at one time. Uses blades 5 to 9 in. long; fast 1½ in. stroke; large work table, 20 in. square.

	Each
No. 2200—24x5 in. jig saw; with 6 assorted fret blades, 5 in. long, one ¼x8¾ in. long jig blade, 3 in. diam. "V" pulley, and wrenches; shipping wt. each 178 lbs.	$108.00
No. 1012—V-pulley, 2 in. diam., for motor, drives jig saw at 1100 RPM; shipping wt. each 8 oz.	.55
No. 1044—V-belt, 44 in. circumference; shipping wt. each 8 oz.	1.40
No. 2203—Steel stand and switch rod; shipping wt. each 45 lbs.	19.75
No. 1601—Motor, ⅓ HP, 1750 RPM, one shaft, with built-in switch; shipping wt. each 33 lbs.	32.25
No. 2208—Complete motor-driven jig saw on stand; shipping wt. each 257 lbs.	161.95
No. 2210—Belt and pulley guard; shipping wt. each 4 lbs.	3.75

All above, one in a crate.

POWER TOOLS

BOICE-CRANE SPINDLE SHAPERS



The money-making shaper for commercial shops, the safe, versatile and practical shaper for schools; low in price for all, especially the hobbyists.

The strong, stiff, accurate, one-piece spindle takes up to 6¼ in. diameter cutters. 6½ in. diameter table opening enables big cutters to be used and they can be lowered below table level to gain 7 distinct shaping advantages. The table opening is reduced in diameter by a series of nestable table rings to make net opening conform to various cutters.

Specifications

Table has miter-gauge groove	20x27½ in.
With front table wing	28x27½ in.
Table-opening diameters	6½, 3½ and 2 in.
Widest bevel edge knife capacity	2½ in.
Widest wing-type cutter capacity	3 in.
Largest diameter cutter capacity	6¼ in.
Vertical spindle travel	1¾ in.
Spindle diameter at ball bearings	1 in.
Cutter arbors: Heavy duty end	¾ in.
Medium duty end	½ in.
Height from floor to table	35 in.

Power: ½ HP cutters 3½ in. and less
1 HP cutters over 3½ in.

Recommended Speed: 7200 or 10,000 RPM

Motor Bracket: Takes motors to 1 HP.
Has quick belt tensioner.

Controls: Grouped, including switch, spindle raise and lower, and spindle housing lock.

7200 RPM Model

Recommended for all general purpose work. 7200 RPM on the Boice-Crane with 3 in. diameter cutters equals the performance of other make 10,000 RPM shapers usually capable of handling cutters only up to 2 in. diameter. This model handles cutters up to 6¼ in. diameter.

	Each
No. 2125—Complete unit, including shaper as specified below, fence, guard and hold-down, belt guard, 2 V-belts, motor pulley; shipping wt. each 250 lbs.	$217.80

Above Unit Consists of the Following:

	Each
No. 2100—Floor type Shaper including outer table ring, 2 notched collars 1¾ in. diam., 3 fill-in collars, starting pin, 6 in. diam., motor pulley, two No. 1035 V-belts and motor bracket; no motor or cutters; shipping wt. each 200 lbs.	$169.00
No. 2130—Fully adjustable fence; shipping wt. each 25 lbs.	29.50
No. 2131—Guard and hold-down; shipping wt. each 7 lbs.	9.30
No. 2106—Guard over motor-pulley and belts; shipping wt. each 35 lbs.	10.00

10,000 RPM Model

High production woodworking plants principally in the furniture field prefer Boice-Crane 10,000 RPM shapers. The higher speed gives 33% to 50% faster production, and up to 50% smoother cuts. At 10,000 RPM's Boice-Crane 3¼ in. Tru-Form two-wing cutters reach a cutting point peripheral speed of over 100,000 inches per minute—producing finest quality cabinet work. Recommended for cutters up to 4 in. diameter.

	Each
No. 2165—Complete unit, includes shaper as specified below, fence guard and hold-down, belt guard, 2 V-belts, motor pulley; shipping wt. each 250 lbs.	$229.80

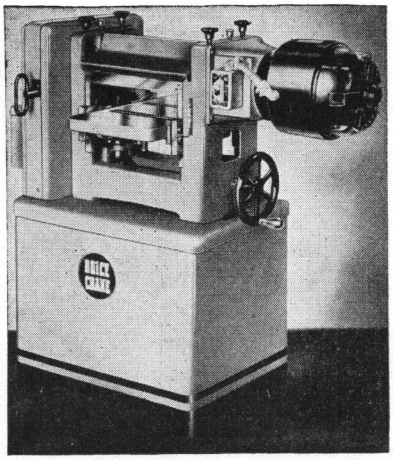
Above Unit Consists of the Following:

	Each
No. 2150—Hi-speed, 10,000 RPM Shaper, floor type, including outer table ring. 2 notched collars 1¾ in. diam., 3 fill-in collars, starting pin, 6 in. diam. motor pulley, two No. 1036 V-belts and motor bracket; no motor or cutters; shipping wt. each 200 lbs.	$181.00
No. 2130—Fully adjustable fence; shipping wt. each 25 lbs.	29.50
No. 2131—Guard and hold-down; shipping wt. each 7 lbs.	9.30
No. 2106—Guard over motor-pulley and belts; shipping wt. each 35 lbs.	10.00

All above, one in a crate.

POWER TOOLS

BOICE-CRANE THICKNESS PLANERS



12 Inch Model

Not only practical for small shops and jobs under 12 in. wide, but has many uses in the large shop where it will do a better job on extremely short, narrow or thin stock than a large planer.

Its heavier construction results in smoother and quieter operation and longer life. One-piece main frame assures lifetime frame alignment. Easily adjustable table gibbs. Fine feed with fewer and less complicated parts. Large, oversize, lightning fast table lifting screws. Large long-wearing gears mounted on ball thrust bearings.

Specifications

Capacity:	Widest Stock	12 inches
	Thickest Stock	4 inches
	Thinnest Stock	$\frac{1}{16}$ inch
	Shortest Stock	6½ inches
Maximum Depth of Cut:		⅛ inch
Rate of Feed:	Head running 3500 RPM'S	14 ft. per min.
	Head running 4500 RPM'S	17½ ft. per min.
Cuts per Inch of Material:		60
Table Size:		20 x 12¼ in.

Frame: One-piece casting, rigidly ribbed. Weighs 150 lbs. alone.

Cutterhead: 3 knife. 2⅜ in. diam. (Cutting Circle 2⅞ in. diam.)

Cutterhead Bearings: S.K.F. self-aligning Ball-Bearings.

Feed Roll Bearings: Bronze in self-aligning journals.

Feed Rolls: Two, each 2¼ in. diam. One corrugated and hardened. One smooth.

Power Required: 1½ to 2 horse power. Belt or Direct Drive.

Direct-Motor-Drive Bench Type

	Each
No. 1002—Boice-Crane 12x4 in. thickness planer, with one set of 3 knives, 1½ HP ball bearing, repulsion-induction motor direct connected to cutterhead, for 110-220 volt, 60 cycle, 1 phase AC, including motor bracket, switch; shipping wt. each 535 lbs.	$493.00
No. 1004—Same as No. 1002 except with 2 HP motor; shipping wt. each 555 lbs.	553.00
No. 1005—Same as No. 1004 except with 2 HP motor for 220-440 volt. 60 cycle, 3 phase AC; shipping wt. each 560 lbs.	533.00
No. 1001—Cabinet Floor Stand for all above models; shipping wt. each 150 lbs.	39.50

Note—Direct connected motors can be furnished for Direct Current. Belt-drive motors only for 25, 40 or 50 cycle AC, single or polyphase. Write for special motor prices.

V-Belt Drive Floor Type Models

	Each
No. 1000—Boice-Crane 12x4 in. thickness planer, with one set of 3 knives, 3 in. diam. V cutterhead pulley, for $\frac{21}{32}$ in. wide V-belt, No. 2016—6 in. diameter V-motor pulley for $\frac{21}{32}$ in. wide V-belt (¾ or 1 in. bore—specify which); shipping wt. each 425 lbs.	$350.00
No. 1006—Consists of No. 1000—12x4 in. V-belt drive planer, No. 1001 cabinet floor stand, No. 2016 single groove motor pulley for $\frac{21}{32}$ in. wide V-belt, No. 2072 V-belt $\frac{21}{32}$ in. wide, No. 2595—1½ HP ball bearing, repulsion-induction motor for 110-220 volt, 60 cycles, 1 phase AC, No. 599 2-pole switch, cord and plug; shipping wt. each 675 lbs.	498.30
No. 1007—Same as No. 1006 except with No. 1016—2 twin groove motor pulley for ½ in. wide V-belts, 2 No. 1072 V-belts ½ in. wide, No. 891—1½ HP ball bearing, polyphase motor for 220-440 volt, 60 cycle, 3 phase AC, No. 899 heavy duty 3 phase switch, no cord or plug; shipping wt. each 675 lbs.	511.40
No. 1008—Same as No. 1007 except with 2 HP motor for 110-220 volt, 60 cycle, 1 phase AC; shipping wt. each 725 lbs.	539.40

Note—Belt drive motors can be furnished for 25, 40 or 50 cycle AC, single or polyphase. Prices for Belt Drive Models for 25, 40 or 50 cycle AC, single or polyphase quoted on application.

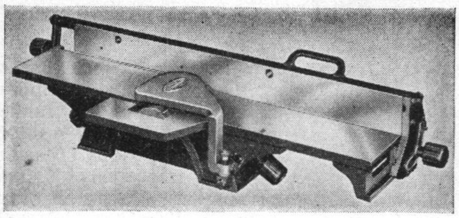
Accessories

	Per set of three
No. 1003—Extra 12 in. high speed planer knives; shipping wt. per set 2¼ lbs.	$12.00
No. 1001—Cabinet floor stand; shipping wt. each 150 lbs.	39.50

All above, one in a crate.

POWER TOOLS

BOICE-CRANE 6 INCH JOINTERS



A big, sturdy, extra long 6 in. jointer which is built and operates with remarkable accuracy.

Long fence locks rigidly at both ends; tilts forward or back to any angle.

Length over all, in.	43½	Fence height, in.	3⅝
Length table, in.	36	Max. width of cut, in.	6
Length fence, in.	35	Max. rabbet depth, in.	$\frac{9}{16}$

Belted Motor Drive, Ball Bearing Bench Model

Each

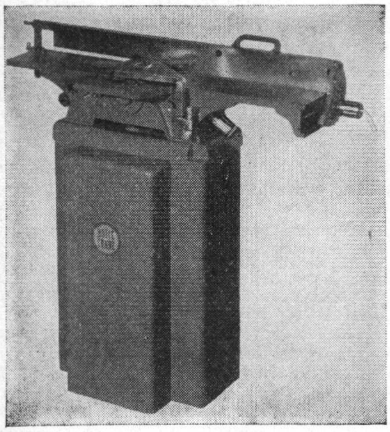
No. 1400-A—6-inch ball bearing jointer with fence, 3-knife head, safety guard, and 2½ in. diameter V-pulley for belt drive; shipping wt. each 130 lbs. $97.50

No. 1015—5 in. diameter V-pulley for motor, ¾ in. bore; shipping wt. each 1 lb. 1.05

No. 1058—V-belt, 58 in. circumference; shipping wt. each 8 oz. 1.65

No. 1408—Cabinet floor stand, chute and motor-bracket; shipping wt. each 105 lbs. 29.75

No. 1415—Motor, ½ HP, 1750 RPM, repulsion-induction, ball-bearing, 110-220 volt, 60 cycle, 1 phase AC, including cord, plug, and a special 2-pole switch that mounts flush on side of cabinet; shipping wt. each 67 lbs. 59.25



Floor Model

Steel cabinet contains and guards 1750 RPM motor, belt and pulleys. Built-in dust chute shields motor by discharging shavings out the side. Removable panel at rear gives access to interior. Handsomely styled.

Each

No. 1420—Complete floor model, 6-inch jointer with belted-motordrive, as itemized above; shipping wt. each 305 lbs. $189.20

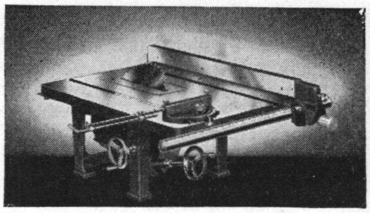
No. 1407—Special rear-knife safety guard; shipping wt. each 3 lbs. 7.25

No. 1409—Belt and pulley guard panel for No. 1408 stand; shipping wt. each 30 lbs. 8.25

No. 1417—Motor, ¾ HP, otherwise same as No. 1415 motor; shipping wt. each 67 lbs. 70.00

POWER TOOLS

BOICE-CRANE TILTING ARBOR SAWS



Ball Bearing

Large over-size saw-arbor for severe service. Table bars may be centered for ordinary work or extended to 21 in. capacity. Wide working zone in front of blade makes cross cutting of 13 in. wide stock easy. Ample 5½ in. table space behind blade for outfeed support. Table measures 20x27½ in.

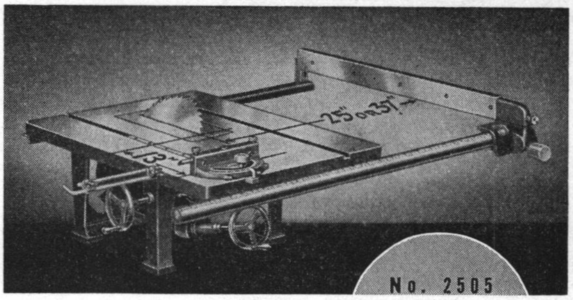
One knob fence control, lightning fast and accurate.

10 in. blade cuts 3 in. stock and makes 45 degree mitre through standard 2x4's. 8 inch blade cuts 2 in. stock.

Each

No. 2500—Complete with "micro-set" ripping fence, combination extension bars, "auto-set" mitre gauge, one 10 in. diameter rip blade, 42 in. circumference V-belt and arbor pulley; shipping wt. each 160 lbs. $120.50

No. 2511—Rolling Drive Pulley, 5½ in. diam. for 10 in. blade; specify size of shaft—½, ⅝, ¾ in.; shipping wt. each 5 lbs. 7.50



Extra Wide Capacity

For use where more than the 21 in. ripping capacity of No. 2500 saw is required.

With the long extension ripping bars on this machine, you can rip a 6 ft. wide panel through the center, at a bevel too, if you wish. Ripping capacity is 37 in. when bars are in extended position, 25 in. when positioned as shown.

To these bars, table-wings of hardwood are easily attached for a permanent extra large table.

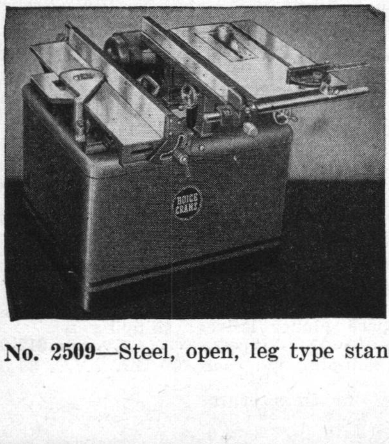
Each

No. 2505—With No. 2537 extra long ripping extension bar of 37 in. capacity in place of standard bar, otherwise same as No. 2500; shipping wt. each 163 lbs. $125.50

Per set

No. 2537—Extra long ripping extension bars only, when ordered separately for No. 2510 saw, no allowance for return of standard bars; shipping wt. per set 12 lbs. $9.25

BOICE-CRANE SAW-JOINTER UNITS



A complete workshop in itself, No. 1400A—6 in. Jointer and No. 2500 tilting arbor saw, compactly mounted together on a steel floor stand; both driven by one motor. Very popular and practical among all classes of wood workers, school shops, industrial plants, even home shops.

Complete combination unit includes the following items shown above: No. 2500 tilting arbor saw with V-belt; No. 2511 rolling drive pulley, 5½ in. diam.; No. 1400A—6 in. jointer with guard; No. 1015 V-pulley, 5 in. diam.

In addition the following items are included:

Each

No. 1037—V-belt, 37 in. circumference .... $ 1.35

No. 2586—Motor, 1 HP, 2-shaft, with push-pull switch 84.50

No. 2549—Cabinet base, with switch rod; shipping wt. each 170 lbs. 48.50

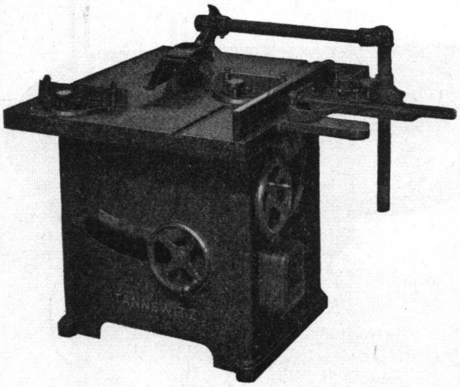
No. 2529—Saw-jointer, complete as above, for 110 V., 60 cycle, 1 phase AC; shipping wt. each 565 lbs. 360.90

No. 2509—Steel, open, leg type stand with switch rod; shipping wt. each 98 lbs. 26.00

All above, one in a crate.

POWER TOOLS

TANNEWITZ TYPE "U" TILTING ARBOR SAWS



In spite of the fact that these saws are very modestly priced, they are precision built-in every detail, very sturdy and embody many advanced features of construction.

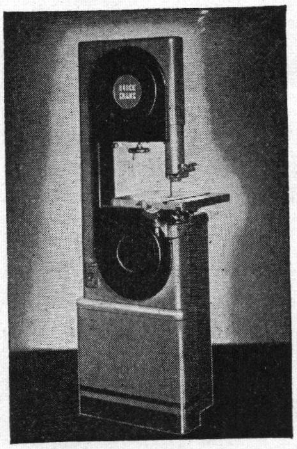
Specifications

One-piece table, in.	37x43	Size arbor where saws are applied, in.	1
Width over all, in.	53	16 in. saw projects, in.	4
Table expands for dadoes, in.	3	Largest saw that can be used, in.	20
Ripping cap., in.	24	10 in. saw projects, in.	1
Cutting off cap., in.	30	Dadoes recommended, in.	10 to 12
Height of table, in.	35½	Vertical saw adjustment, in.	4
Size base at floor, in.	27½x32½	Alemite lubrication.	

Each

Type "U"—Complete with 5 HP AC motor, push button control, 16 in. diam. crosscut saw blade, mitre gauge, rip fence, curved steel splitter and rigid overhead guard; net wt. each 1350 lbs.; shipping wt. each 1500 lbs. $1179.75

BOICE-CRANE BAND SAWS



14 in. Model Specifications

Sawing Capacity: Blade to guard ....13½ in. Guide to work table ......7¾ in.

Table: Tilts on double-trunnions 45° to right; 10° to left ....15x15½ in.

Height over all of floor model ..67 in.

Height of Work-table from Floor ....39¼ in.

Over all width ....27½ in.

Over all depth ....29 in.

Blade widths ....3/16, ¼, ⅜, ½ and ¾

Length of blade ....98 in.

Wheels: Disc, moulded textolite 14 in. diam. 1 in. face; wt. ....40 oz.

Bearings: Grease-sealed ball bearings.

Frame: Heavy welded-steel construction.

Operating Speeds

1-Speed Model

Wheel, RPM	1120
Blade, ft. per minute	4100

8-Speed Model

Wheel, RPM	1120	890	660	450	70	50	35	25
Blade, FPM	4100	3260	2420	1650	250	183	128	92

Single Speed, Direct Motor Drive Models

Lower wheel is keyed directly to shaft of motor. **Without** motors.

Each

No. 2300—Bench Model, 14 in. complete with ⅜ in. wide wood sawing blade; shipping wt. each 197 lbs. $104.50

No. 2301—Floor Model, cabinet base, otherwise same as No. 2300; shipping wt. each 334 lbs. 165.00

Single Speed, V-belt Drive Models

These saws have lower wheel on a ball bearing mandrel.

Each

No. 2304—Bench Model, 14 in., complete with ⅜ in. wide blade and 6 in. diameter V-pulley; shipping wt. each 230 lbs. $115.00

No. 2301—Floor Model, cabinet base, otherwise same as No. 2304; shipping wt. each 367 lbs. 187.00

No. 1014—V-pulley, 4 in. diameter for motor .... .85

No. 1058—V-belt, 60 in. circumference 1.65

8-Speed Gear Drive Models

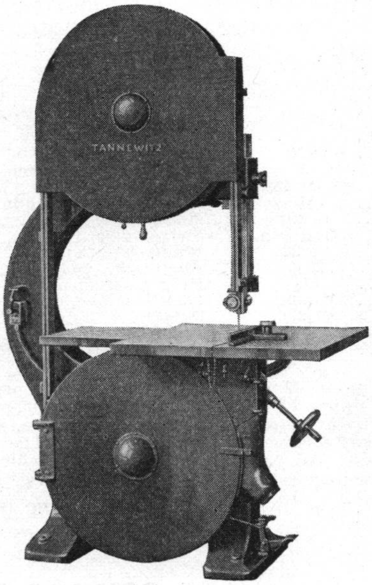
Equipped with quick-change gear box and multi-groove pulley drive. An efficient speed is instantly available to the operator for cutting a wide range of industrial materials. Without motors.

Each

No. 2308—Bench Model, 8-speed band saw, with 4-step V-pulley (drive), one ⅜ in. wide metal sawing blade, No. 1058 V-belts, and No. 1101 4-step pulley for motor shaft; shipping wt. each 320 lbs. $218.00

No. 2309—Floor Model, cabinet base, otherwise same as No. 2308; shipping wt. each 427 lbs. 280.00

TANNEWITZ TYPE "PH" HIGH SPEED BAND SAWS



Strong, Rigid Frame for Heavy Duty

Strength and rigidity in a band saw frame is of much more importance than is usually attached to it, since to a great degree it controls vibration and smoothness of operation.

In Tannewitz high speed band saws the frame is an exceptionally heavy casting, ¾ to 1 in. thick. The gooseneck is reinforced internally with a center rib, and since this represents the shortest distance between the main frame and upper wheel bearing, this is the strongest, stiffest type of construction conceivable—much stronger than the rectangular type which is bound to be longer and consequently weaker.

Specifications

Floor space required, 35x60 in.; maximum height over all 7½ ft., minimum height over all 6 ft. 9 in. Table 26 in. wide by 28 in. long, tilts 45° to right and 10° to left; height of table from floor 38½ in.

Maximum range 30 in. wide by 15 in. under guide; 18 in. may be had under guide on special order. 13 in. from front edge of table to saw. Upper wheel has vertical adjustment of 7 in.

No. 1 Wright roller guides with ball bearing dust-proof guide wheels are furnished above and below.

3 HP, 900 RPM ball bearing motor mounted directly in the frame and carrying the lower band saw wheel on its shaft.

Drive by tight and loose ball bearing pulley is available by using 12 in. diam. by 3 in. face pulleys.

Drive by belt from an 1800 RPM motor mounted on a bracket at the rear is also available. In such case, the drive is provided with a ball bearing idler and a metal guard enclosing the belt.

Push button control with overload and no voltage protection.

This machine will use blades from ⅛ to 1½ in. wide. The width of the wheels is 1¾ in.

Maximum saw length 17 ft.

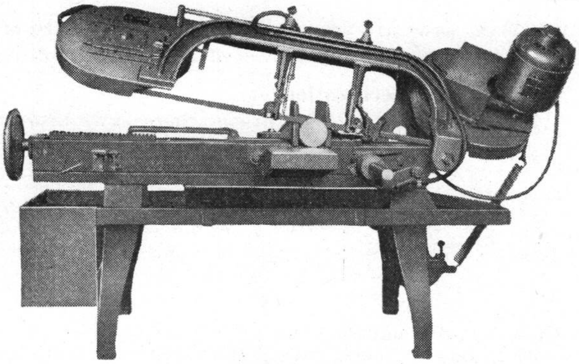
Each

Model "PH"—30 in., with 3 HP motor(specify voltage); net wt. each 1800 lbs., shipping wt. 1950 lbs. $1512.50

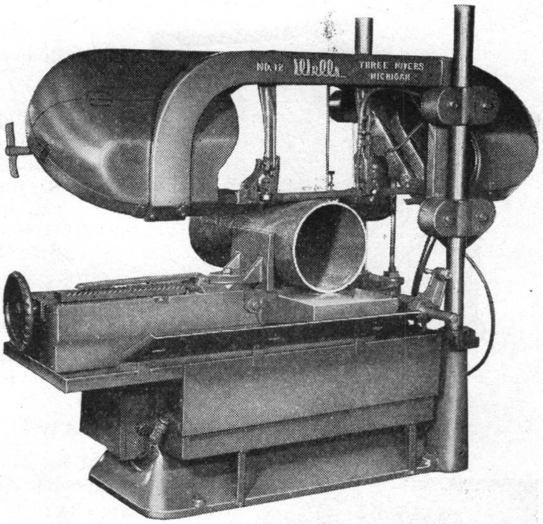
All above, one in a crate.

HORIZONTAL METAL CUTTING BAND SAWS

WELLS



No. 8



No. 12

With or Without Wet Cutting Attachment

Wells horizontal metal cutting band saws are designed for production and maintenance work in mills, factories, shops, and all industries requiring economical metal cutting operations.

No. 5

Capacity	
Rectangular, in.	5x10
Rounds, diam., in.	5
Speeds, feet per minute	60, 90, 130
Motor size, HP	⅓
Swivel vise	to 45°
Blade length	8 ft. 2½ in.
Blade size, in.	½x.025
Height to top of bed, in.	25½
Width of bed, in.	8½
Drive	V-belt
Floor space, in.	21x50
Approximate shipping wt. each, lbs.	425

No. 8

Capacity	
Rectangular, in.	8x16
Rect. with special guide, in.	5x24
Rounds, diam., in.	8
Speeds, feet per minute	60, 90, 130
Motor size, HP	½
Swivel vise	to 45°
Blade length	11 ft. 7 in.
Blade size, in.	¾x.032 in.
Height to top of bed, in.	25½
Width of bed, in.	10¼
Drive	V-belt
Floor space, in.	24x72
Approximate shipping wt. each, lbs.	750

The flushing and lubrication action of the **Wet Cutting System** promotes efficient chip removal, which permits safe use of higher FPM cutting speeds and increases blade efficiency.

The system consists of the efficient chip pan, fluid tank with centrifugal pump-motor unit, screened intake, tubing, a conveniently located flow control valve. The unit operates automatically in conjunction with the machine. All working parts are removable and easy to clean.

The self-contained system is factory assembled on new machines.

No. 12

Heavy duty, hydraulically operated; with automatic cutting cycle and special blade pressure controls.

Automatic frame return and blade motor shut-off. Easily controlled depth cutting.

Hydraulic system and saw blade drive motor are controlled by magnetic switches; overload protection.

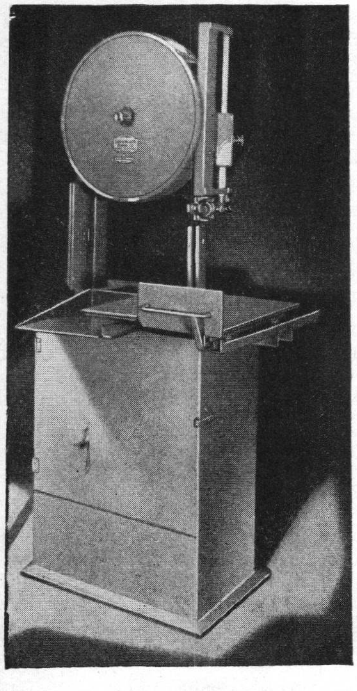
Capacity	
Rectangular, in.	12x16
Rounds, diam., in.	12¾
Die blocks, in.	12¾x16
Clearance bed to blade, in.	18
Speeds, feet per minute	50, 90, 150
Blade motor, HP	¾
Hydraulic system motor, HP	⅓
Blade length	13 ft. 7 in.
Blade size, in.	1x.032
Height to top of bed, in.	24¼
Width bed, in.	12¼
Base area, in.	28x48
Size over all, in.	32x78x59
Approximate shipping wt. each, lbs.	1845

One in a crate.

Prices on Request

DRY ICE BAND SAWS

JONES SUPERIOR 20 INCH



Every feature which will make these machines easy and safe to operate is included as standard equipment. Oversize roller bearings on all moving parts insure long life with a minimum of attention, and the perfect balance of the wheels and heavy construction throughout eliminate vibration. Blade life is increased considerably.

Ball bearing mounted roller table, composition top with rule set in. Roller table operates on both sides of blade so that both pieces of ice are returned to front of blade after cut has been completed.

An upright guard completely encloses blade when table is in forward or loading position. A lock holds it there until the operator is ready to start cutting.

Both upper and lower wheels are mounted on oversize Timken roller bearings. The safest type of enclosing guards are furnished as standard equipment.

Completely guarded V-belt drive.

May be furnished with various size motors from ½ to 2 HP.

No. 20

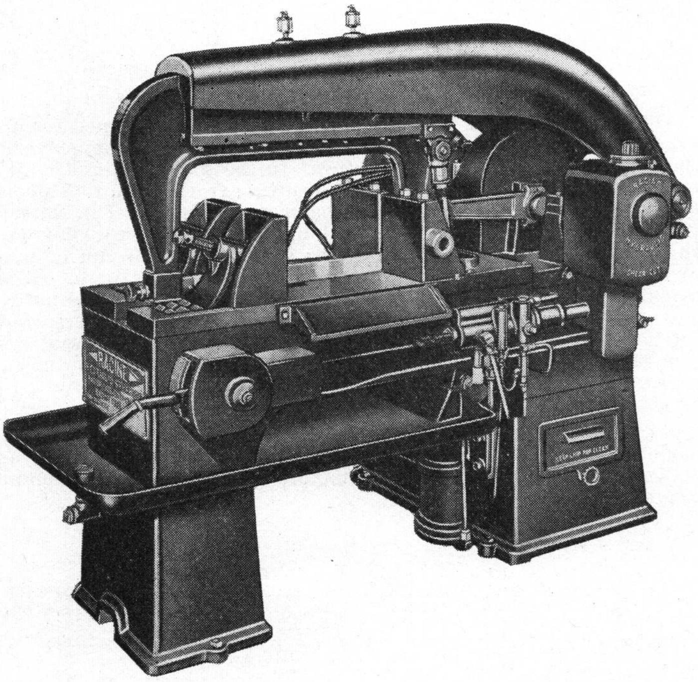
Size wheels, in.	20
Distance from table to saw guide, in.	12
Length saw blade	11 ft. 4 in.
Floor space, in.	36x40
Shipping wt. each, lbs.	600

One in a crate.

Prices on Request

METAL CUTTING MACHINES

RACINE HYDRAULIC HEAVY DUTY



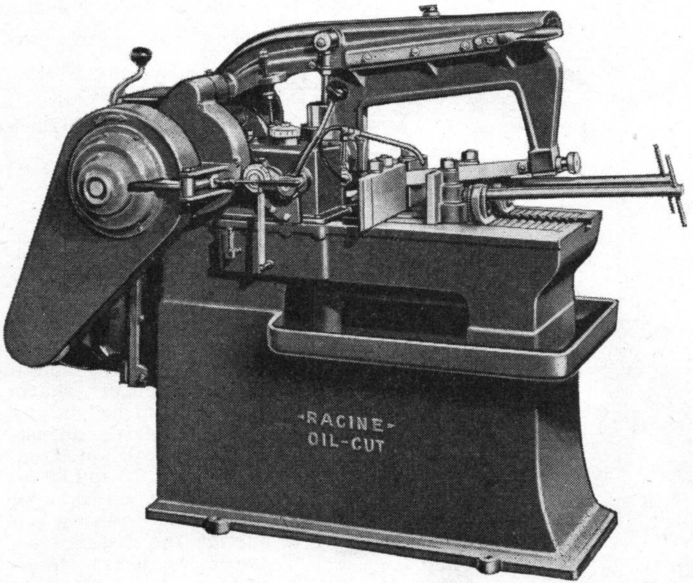
Built to meet the highest standards of machine tool design, these machines are finished to the last detail, thoroughly improved and simplified, as evidenced by the smooth design of all models.

These heavy duty production metal cutting machines are truly the modern saws for modern industry.

Ranging in capacity from 10x10 in. to 20x20 in. Racine Hydraulic Saws embody the latest developments in hydraulic engineering. A compact low pressure hydraulic system centralizes operating control, simplifies design, and provides smooth, oil-cushioned operation. Accurately determined and sensitively controlled hydraulic cutting feeds provide for the precision sawing of all metals, from thin-walled tubing and soft metals through the toughest bars, tool steels, and die blocks.

The hydraulic operating and control units are simple and compact, with a minimum of working parts. It is simple and easy to operate.

Nos.	**30**	**31**	**33**	**40**	**41**
Rated capacity, in.	10x10	12x12	12x16	14x20	20x20
Actual capacity, in.	10x11	13x13	13x16⅝	.....	.....
Capacity with swivel vise at 45°, in.	10x6½	13x6½	13x10	14x14	20x14
Blade, length, in.	18	21–18	24–21	30	30
Length of stroke, in.	6	6	6	6	....
Strokes per minute	60–90–130	60–90–130	60–90–130	65–85–115	65–85–115
Motor HP (Std. 1200 RPM) (25 & 50 Cy. AC—1450RPM	3	3	3	3	3
Height, floor to table top, in.	31	31	31	31	43
Floor space (Belt drive and arranged for motor), in.	48x72	48x72	48x72	48x78	48x78
Floor space, motor drive, in.	48x84	48x84	48x84	48x90	48x90
Shipping wt., lbs.					
Belt drive	3165	3180	3400	5000	5600
Motor drive	3360	3690	3600	5250	5850
Arranged for motor	3210	3540	3450	5100	5700



RACINE HYDRAULIC "OIL-CUT"

With Hydraulic Control of Feed and Pressure

For general cutting of bars, tubing, structural shapes; for tool rooms, maintenance departments, and modern production shops, these machines have proved their superiority.

Here is a Machine Which Offers:

1—Single lever control of feed, clutch, rapid traverse and neutral operating positions.

2—Self-compensating, flexible hydraulic feed which regulates itself automatically to the kind, size and shape of work.

3—Simple yet sensitive adjustments for cutting of thin walled tubing or solid bar steel—soft metals or tough alloys.

4—Extreme rigidity of construction to insure remarkable cutting accuracy.

5—High speed cutting ability for volume production and low cost general shop service.

6—Compactly built, smoothly designed; all essential "built-in" and all working parts running in oil.

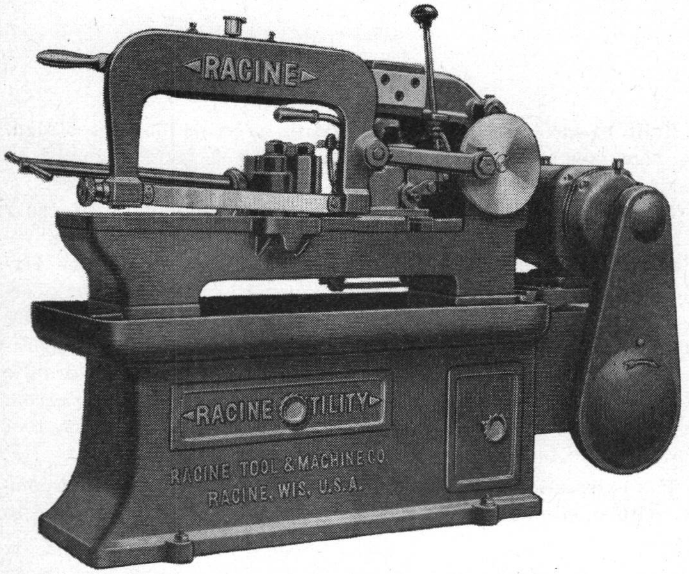
Stroke, in.	5
Speeds, strokes per minute	70, 100, 140
Drive pulley speed, RPM	430
Blade—14 in. long, 1¼ in. wide, 16 ga., 4 or 6 tooth per inch	
Floor space, in.—Motor driven	24x52
Belt driven	24x43

Capacity, in., rated	6x6
Actual	6x6⅝ or 6⅝rd
at 45°	4x6
Height to table top, in.	26
Weight each, lbs.	
No. 6A—Belt driven	950
No. 6-CX—Arranged for motor but without motor or electrical equipment	998
No. 6-C With std. 2 HP, 1200 RPM motor	1144

Prices on Request

METAL CUTTING MACHINES

RACINE UTILITY SAW



Hydraulic Feed and Pressure Control

The Racine Utility Saw is a modern shop saw designed for all around metal cutting in the large or small plant. They supplement the high priced production machines. In the tool room and maintenance departments, they do all the cutting from tough tool steels and dies to mild bars, tubing, and structural shapes. The Racine Utility Saws have a simplified oil hydraulic feed providing accurate feed and pressure control for sawing the full run of materials from thin walled tubing to tough alloy steel bars. Each machine is oil-cushioned in operation with feed and control mechanisms self lubricated. There are no trains of gears, levers, and ratchet devices to get out of adjustment. A simple fool proof design that will give fast, accurate sawing performance for many years.

These machines are made in two models—Wet Cut and Dry Cut types. The principle of operation and working parts of both models are the same except that the Wet Cut machines run at higher speeds, and have larger motor, cabinet base for coolant reservoir, and pump.

Rated capacity, in.	6x6
Actual capacity, round, in.	6⅝
Capacity at 45°, in.	4
Blade—14 in. long, 1¼ in. wide, 4 to 6 teeth per inch.	
Stroke, in.	5
Speeds, standard, wet cut, RPM	100, 140
Speeds, with 3-speed transmission, wet cut, RPM	70, 100, 140

Motor, AC or DC, wet cut	1 HP 1200 RPM
Motor, 25 or 50 cycles AC, wet cut	1 HP 1450 RPM
Floor space, belt driven, wet cut, in.	17x40
Floor space, motor driven, wet cut, in.	20x48
Height, floor to top of table, in.	20
Wt. each, lbs., belt driven, wet cut	650
motor driven, wet cut	690

These Machines are Made in the Following Combinations:

Dry Cut

No. D-3—Belt driven.
No. D-3B—Motor driven.
No. D-3BX—Arranged for motor, less electrical equipment.

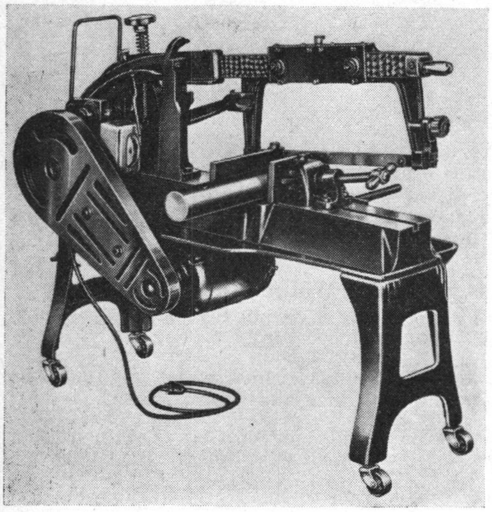
Wet Cut

No. W-3—Belt driven.
No. W-3B—Motor driven.
No. W-3BX—Arranged for motor, less electrical equipment.

Prices on Request

PORTABLE POWER HACK SAWS

"SAWMASTER"



Heavy duty rugged construction; sturdy quick acting vise; adjustable bronze bearing back plate; automatic catch and release saw frame support.

No. 3167—Heavy Duty

Capacity, in.	6x7
Capacity, in. (45° angle)	4
Blade length, in.	14
Blade width, in.	1
Blade stroke, in.	5
Speeds, SPM	100, 110
Vise angles	0 to 45°
Switch	Automatic

Saw frame support—Automatic
Motor (std. equipment) ½ HP single phase*, capacitor
Casters—Steel wheel (2 with side brakes)

Width, in.	16
Height, in.	32
Length, in.	36
Ship. wt. each, lbs.	290

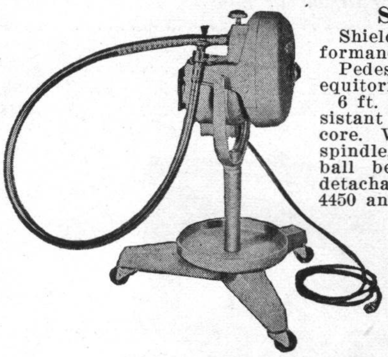
*Also available with ½ HP three phase motor.

Note—Also available in 4x4 and 6x6 in. capacities.

Prices on Request

FLEXIBLE SHAFT MACHINES

STOW "STREAMLINER"



Streamlined for Balance

Shielded for safety; superior in performance.

Pedestal mounted for rollaway; equitorial mounted for free swing.

6 ft. flexible shaft. $\frac{15}{16}$ in. OD oil resistant synthetic rubber; .400 in. diam. core. Wheel arbor has ½ in. diam. spindle, 20 threads per inch. Precision ball bearing handpiece; wheel arbor detachable. Shaft speeds 1725, 2700, 4450 and 6900 RPM.

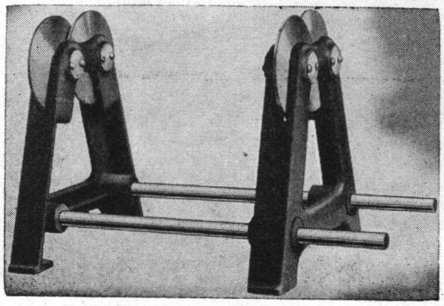
½ HP motor, 110/220 volts, 60 cycles, single phase.

	Each
No. 6690-602—Net wt. each 68 lbs.	$165.00

One in a box.

BALANCE WAYS

ANDERSON IMPROVED



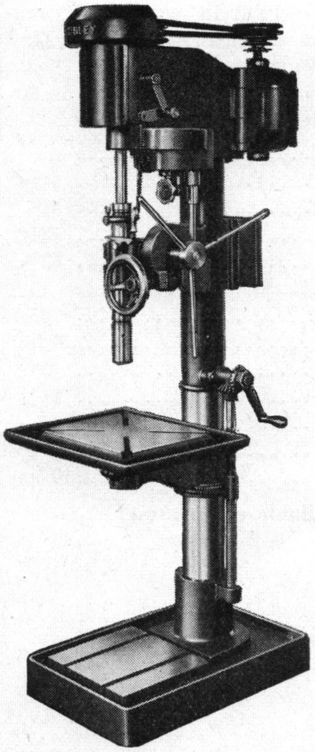
20, 40 and 60 in. models come with plain shafts. Longer shafts can be furnished in any size. Standards adjustable toward or from each other. 72 and 96 in. sizes have racks and pinions for quickly adjusting the distance between the heavy standards.

Swing (Diam. of work), in.	**20**	**40**	**60**	**72**	**96**
Greatest distance between standards, in.	20	30	30	66	88
Capacity, lbs.	1000	2000	2000	5000	10,000
Shipping wt. each, lbs.	45	80	150	350	650

Detailed Information and Prices on Request

DRILL PRESSES

SIBLEY MODEL C-20



A new 20 in. swing, general purpose drilling machine designed for greater speed and power. It is adequately sensitive to handle the smaller size drills with hand feed, yet has ample power to drill 1½ in. in mild steel.

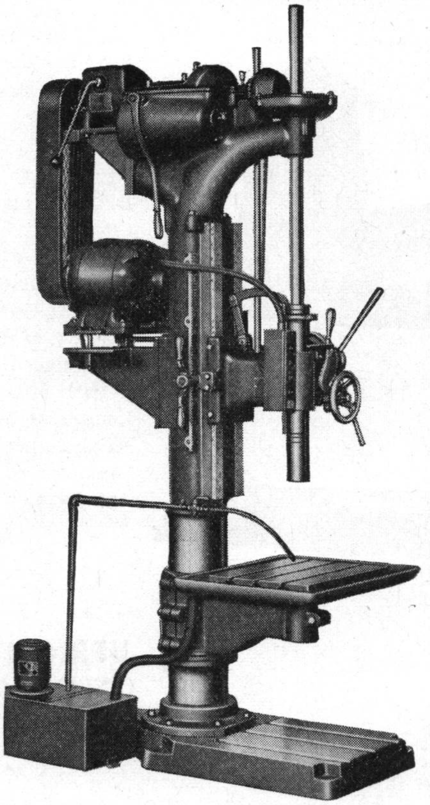
Specifications

Drilling capacity, in.	
In cast iron	1½
In mild steel	1¼
Tapping US pipe threads in cast iron, up to, in.	1
Drills to center of circle, in.	
On table	20¼
On base	18
Spindle to base, in.	
Maximum	41
Minimum	33
Spindle to table, max., in.	24
Traverse of table on column, in.	16½
Diam. column, in.	5¼
Table work surface, in.	13½x15½
Table over all, in.	19x21½
Spindle feed traverse, in.	8
Hole in spindle, Morse Taper No.	3 or 4
Spindle speeds in direct drive	400, 575, 900, 1360
Spindle speeds in back gear	65, 95, 150, 225
Working surface of base, in.	13¼x13¾
Base over all,	18½x29½
Smallest diam. of spindle, in.	1¼
Spindle nose, diameter by length, in.	2¼x4½
Geared power feeds per spindle revolution, in.	.003, .006, .010
Horsepower required	2
Height over all, spindle up, in.	83
Height to top of belt guard, in.	81½
Floor space, in., including overhang	22x38
Net weight each, lbs.	
With motor and starter	1020
Without motor and starter	920
Approx. shipping wt. each, with motor and starter, lbs.	1200

Prices on Request

DRILL PRESSES

SIBLEY MODELS D-24 AND D-28



Offers increased operator efficiency with its V-belt drive direct from the motor to the 4-speed geared transmission which is part of the top frame assembly.

Specifications

Drilling cap., in.	
In cast iron	2
In mild steel	1¾
Tapping in cast iron, US threads, in.	1¾
Spindle to base, in.	
Maximum	52½
Minimum	20
Spindle to table, Max., in.	35
Traverse on column	
Table, in.	13
Head, in.	25
Diam. column, in.	8
Rectangular oil groove table, in.	22x26
Smallest diam. spindle, in.	1⅝
Diam. spindle sleeve, in.	3
Spindle feed, traverse, in.	11
Morse Taper No.	4
Ratio of spiral bevel drawing gears	2:1
Ratio of back gears	4¼:1
HP required	5
Floor space, in.	23x63
Height over all, in.	95
Height over all, spindle up in.	119
Working surface of base, up	20½x21½
Range of power feeds, in.	.006, .010, .015 and .020

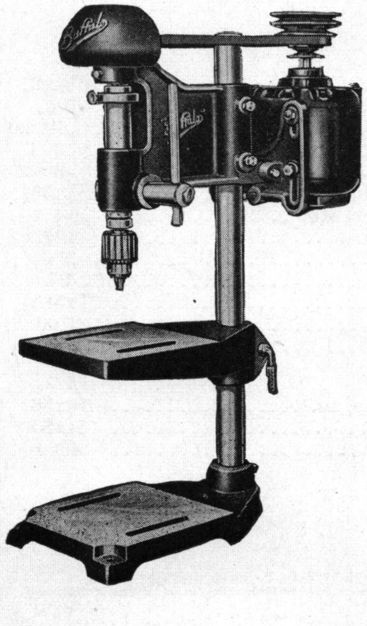
Range of spindle speeds available in both models:

	Back Gears	Direct Gears
Option No. 1	21, 27, 42, 85	91, 117, 184, 365
Option No. 2	25, 32, 50, 98	106, 135, 211, 419
Option No. 3	37, 50, 76, 150	160, 218, 328, 650

Model Nos.	**D-24**	**D-28**
Drills to center of circle on base or table, in.	24½	29
Diam. standard round table, in.	21	25
Net wt. each, with motor, lbs.	2200	2300
Wt. crated, with motor, lbs.	2425	2525

Prices on Request

BUFFALO BENCH MODEL



Here is a low cost drilling machine designed primarily for light manufacturing.

Design and construction of the new drill is characteristic of other Buffalo drills, of which there is a complete line from No. 13 to the large "RPMster," (Complete information on request.)

Ruggedness and dependability are built-in. Table and base are smooth and level, slotted for convenience. Table swings away, and raises or lowers by loosening, a quick-locking lever.

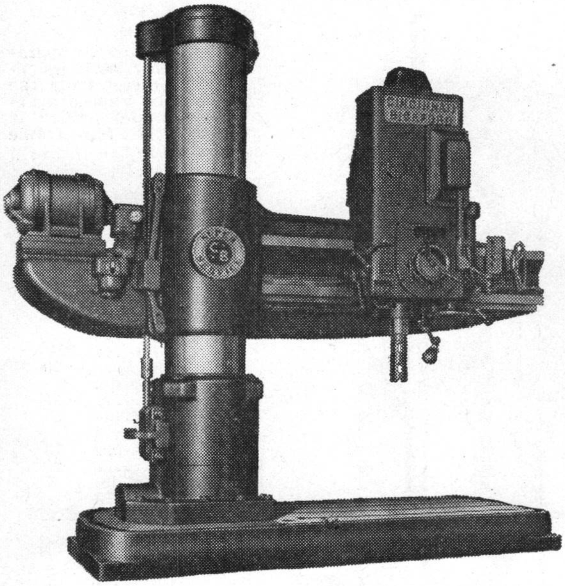
Specifications

Capacity in cast iron, in.	½
Feed travel, in.	3
Spindle diam., in.	½
Column diam. (solid steel), in.	1½
Spindle to center column, in.	6½
Spindle nose to table, max., in.	11
Spindle nose to base, max., in.	15
Speeds, with 1750 RPM motor	850, 1200, 2400 and 3400 RPM
Motor recommended	⅓ HP, 1750 RPM
Working surface of table, in.	7x7
Working surface of base, in.	8x8

	Each
No. 13—Without motor; net weight each 58 lbs.; boxed weight each 65 lbs.	$39.95

RADIAL DRILLS

CINCINNATI-BICKFORD



Cincinnati-Bickford Radial Drilling Machines are built in many sizes ranging in column diameter from 7½ to 26 in. and in arm length from 2½ to 12 ft.

The machine illustrated has 11 in. diameter column and 4 ft. arm.

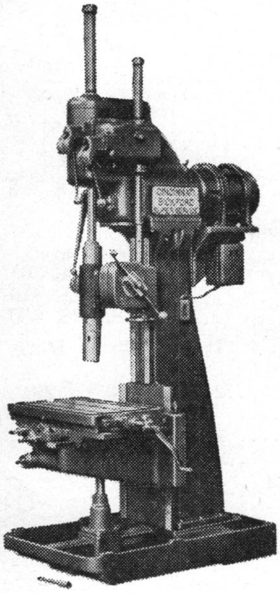
Specifications—36 Speed Head

Arm length, ft.	4
Drills in plane of base to center of circle, ft.	8
Center of column to face of column, in.	9⅛
Minimum distance face to column to spindle, in.	12⅛
Horizontal traverse of head on arm, in.	33⅜
Vertical traverse of spindle in head, in.	16
Vertical traverse of arm on column, in.	25
Working surface of base, in.	59x36
Length of arm bearing on column, in.	26
Length of head bearing on arm, in.	21¾
Morse taper in spindle, No.	5
Diameter of spindle, least section, in.	24
Approx. net wt. each, without table, lbs.	10,500

Information and Prices on all Sizes Available on Request

UPRIGHT DRILLS

CINCINNATI-BICKFORD



Cincinnati-Bickford Upright Drilling Machines are available in both round and box column types, in 21, 24 and 28 in. sizes.

The box column machine is illustrated.

Long, productive and accurate machine life is assured by the direct connected driving motor, positive type feed clutch, automatic oiling, ball and roller bearing construction, use of heat treated alloy steel gearing, multiple splined shafts with integral keys, and complete enclosure of all mechanism.

Table arm controls at the front of the machine, automatic depth gauge, radial drill type of spindle control feed engagement, direct reading speed and feed plates, and convenient levers for instant engagement of the correct speed and feed, are features that make for faster and easier operation.

Specifications

21 in. Machine, 9 Speeds, 4 Feeds, Box Column

Capacity, swing, in.	
Center of spindle to front of lower column	11
Center of spindle to face of upper column	10
Measured on plane of table	9 15/16
Spindle to finished surface of base, in., maximum	44¾
minimum	22¾
Max. distance spindle to table, in.	32¼
Min. distance, floor to table top, table in lowest position, in.	17¾
Vertical adjustment of table, in.	11¼
Vertical adjustment of sliding head, in.	12
Vertical travel of spindle, in., by power feed	9¾
by hand feed	10
Working surface of table, in.	16½x21
Height of base, in.	5¼
Standard feeds (thousandths per rev.)	4, 8, 14, 20
No. of spindle speeds	9
HP of motor recommended	3
Spindle nose, diam. and length, in.	2 13/16x5¾
Spindle bored to fit Morse Taper, No.	4
Spindle diam. at least section, in.	1¼
Spindle sleeve, diam., in.	2⅞
Height over all, in.	97
Approx. floor space, in.	27x58½
Approx. net wt. each, lbs.	2100
Approx. crated wt. each, lbs.	2400

Gang Drills—Standard High Base

Distance between spindle centers (minimum standard), in.	20
Max. distance spindle to table, in.	28½
Vertical adjustment of tables, in.	13
Min. distance floor to table top, in.	21¾
Working surface of table, 2 units, in.	16x36
Floor space, 2 units, in.	44x55
Net wt., 2 units, lbs.	4300

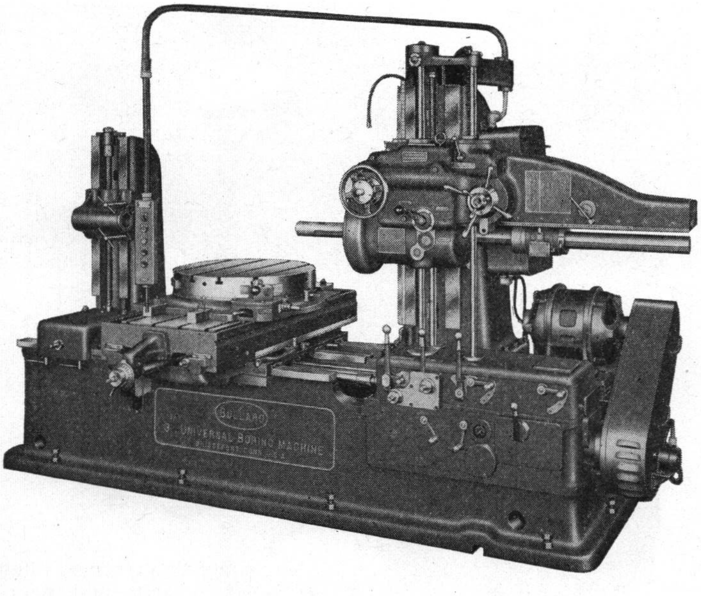
Gang Drills—Standard Low Base

Distance between spindle centers, in. 26

Other dimensions same as for single spindle units.

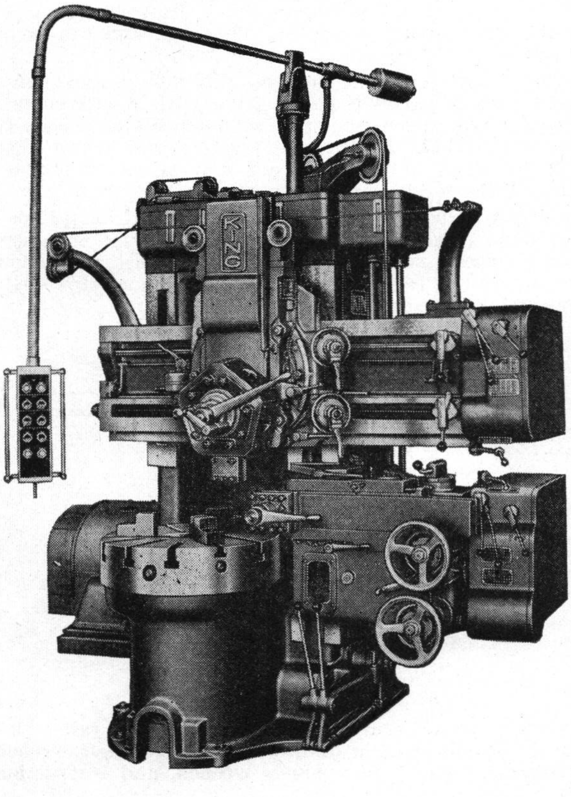
Information on Other Machines and Prices Available on Request

HORIZONTAL BORING MACHINES



Detailed Information and Prices on Request

VERTICAL BORING AND TURNING MACHINES

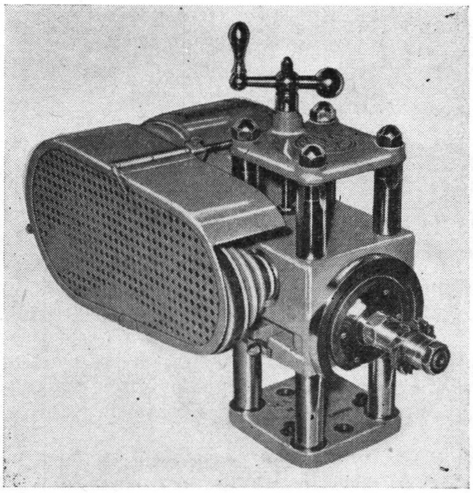


30 in. Model Illustrated

Complete Information and Prices Available on Request

LATHE CONVERTERS

MASTER



The Master Lathe Converter is a precision machine tool, ruggedly constructed, compact and simple in design, especially adapted for maintenance, tool and experimental department where a wide range of metal working operations are required.

Its simple set-ups make it easy to perform practically any type of metal working operation. It is limited only by the lathe on which it is used. The lathe holds the workpiece and the Converter performs the operation by the use of interchangeable heads mounted by bolts in a circular T-slot on compound of the basic unit.

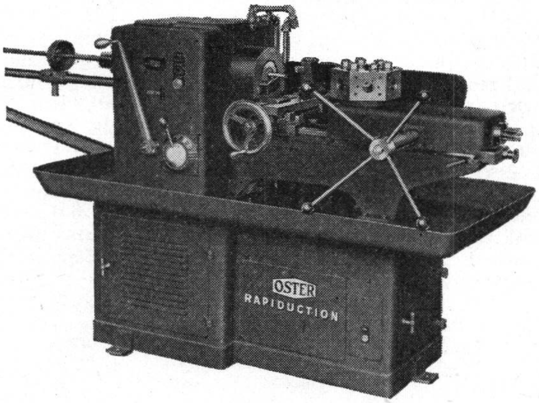
Built in 3 sizes:
- Model "M" (illustrated) for lathes 18 in. and larger
- Model "B" for lathes 13 to 24 in.
- Model "C" for lathes 9 to 16 in.

Many attachments available, such as:
- Internal milling heads
- Internal and external grinding heads
- Thread milling heads
- Dividing heads
- Keyseating heads
- Cutter arbors, etc.

Complete Information and Prices on Request

LATHES

No. 601—OSTER "RAPIDUCTION"



Capacity with Automatic Chuck—$1\frac{1}{2}$ in. round bar. Swing over bed 14 in.; over cross slide $6\frac{1}{2}$ in.

This simplified, low cost lathe can be used successfully by less skilled mechanics as every detail is engineered for easy operation and maintenance.

The 4-speed motor permits speed changes without change of sheaves. (Also obtainable with 2-speed motor when specified). Motor is mounted on oil-resistant rubber to insure smooth, quiet operation. Coolant pump has its own motor to provide uniform lubrication independent of spindle speeds.

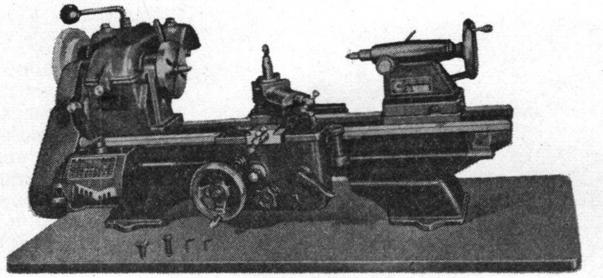
Electrical controls have speed selector switch located conveniently for the operator. The long base of heavy construction provides extra rigidity of the machine.

The No. 601 "Rapiduction" can be furnished with either the automatically indexed, 6-position turret, or with plain saddle, as required. Other optional features make this machine extremely versatile to meet individual requirements.

Complete Information and Prices on Request

LATHES

CLAUSING PRECISION QUICK CHANGE



Standard Quick Change

Spindle Speeds—Six. Back geared, 43-73-126. Direct drive, 260-440-730.

Thread Range—48 selections, 4 to 224 threads per inch, right or left. All changes made at gear box by means of three controls.

Thread Feed—Split nut engaged by lever. Acme 8-thread lead screw.

Power Longitudinal Feed—Worm and worm gear, engaged by friction clutch. Feeds from .0006 to .036 in. per revolution of spindle. All changes made at gear box.

Power Cross Feed—Worm and worm gear, engaged by friction clutch. Feeds from .0002 to .011 in. per revolution.

Countershaft—Compact, integral with headstock. Plain type without clutch, ¾ in. diameter, sleeve bearings.

Countershaft Pulley—Three step, 3½, 4½, 5½ in. diameter. 11⁄16 in. vee belt drive.

Spindle Pulley—Three step, 3, 4, 5 in. diameter.

Motor Belt Required—Not furnished. Takes regular vee type, ½ in. face.

Motor Required—⅓ HP capacitor or repulsion induction, 1725 RPM.

Equipment—Plain countershaft, headstock belt, 6 in. faceplate, two 60° centers, reducing sleeve, wrenches, motor pulley (specify bore), and instruction book.

Automatic Apron

Speed and convenience are the outstanding characteristics of the Quick Change lathe. The full thread range is instantly available by simply positioning two levers. This means speed on threading jobs, and equally important, the right power feed for every kind of cut and material. The Automatic Apron adds to the convenience of working. Power feeds are instantly and easily engaged by means of an improved friction clutch working through worm and worm gears. The Clausing Quick Change lathe is also fitted with conventional split-nut feed for use when threading. Thread dial, standard equipment on all models, shows when to engage feed. Fool-proof Construction guards every movement. Lockout devices prevent use of friction feed when split-nut feed is engaged and vice-versa. It is impossible to engage both cross and longitudinal feeds at the same time. When power feeds are in neutral, there is no gear drag on the hand feeds. The apron is double walled for maximum support of gear shafts. Oil reservoir assures constant lubrication.

Nos.	Each	Between centers, in.	Swing over bed, in.	Swing over carriage, in.	Ship. wt. each, lbs.
106	$......	17	12	7½	370
107	......	24	12	7½	390
108	......	36	12	7½	420

Prices on Request

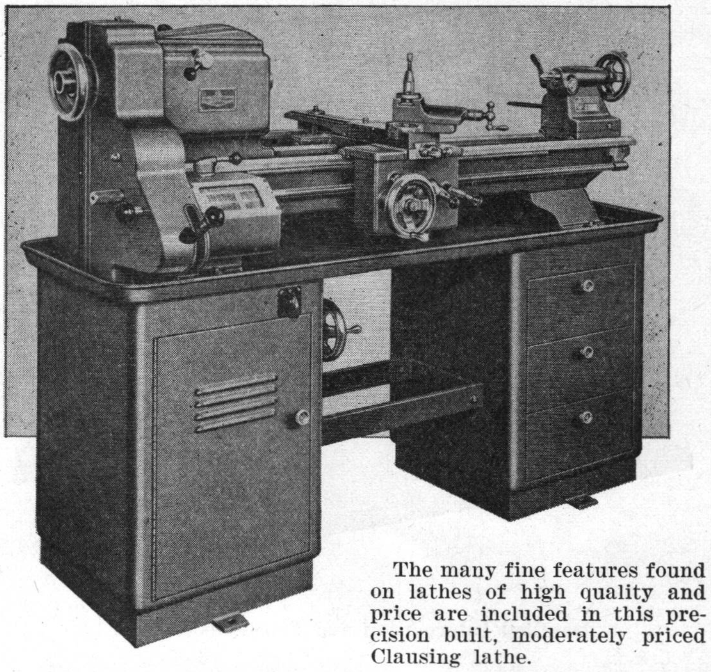
MACHINE TOOLS

We represent many excellent lines which space limitations precluded us from showing.

We are prepared to help you with any of your production or maintenance shop problems.

LATHES

CLAUSING PRECISION



The many fine features found on lathes of high quality and price are included in this precision built, moderately priced Clausing lathe.

This lathe has been developed to meet the needs of many factories, public schools, vocational institutions and machine shops for a moderate priced lathe with a high degree of toolmaker's accuracy and embodying the most complete array of safety features as yet offered in this type of lathe. The modern all steel cabinet is of the very latest design with sturdy bracing and smooth, securely welded joints to offer a most satisfactory solid support to the lathe. The chip pan is of heavy gauge and serves as top to the two columns. The three large bench drawers are most useful in storing collets, chucks, various tools, etc. and can be individually locked.

The Headstock column encloses the motor and drive unit. Equipped with a variable speed drive with a convenient handwheel control for speed selection of thousands of speeds from 20 RPM to 1500 RPM. A sturdy one-horsepower motor drives directly to the drive unit, coming out with better than two to one reduction to the large drive sheaves on the spindle.

The speed reduction from the drive unit to the spindle allows the maximum power to be transmittted. The motor control, forward and reverse, switch is mounted in a most convenient place on the cabinet. It is almost impossible to bump this switch and accidentally turn it on.

Specifications

Swing over bed, in.	12¾
Swing over saddle wings, in.	12¼
Swing over saddle, in.	7¾
Distance between centers, in.	36
Bed length, in.	58¾
Hole through spindle, in.	1⅜
Collet capacity, in.	1
Headstock spindle taper (sleeved)	No. 3MT
Optional	No. 2MT
Tailstock spindle taper	No. 2MT
Crosshide travel, in.	7 11⁄16
Angular compound travel, in.	2¾
Tailstock spindle travel, in.	3
Tailstock spindle diam., in.	1 3⁄16
Tailstock set over, in.	1
Variable speed drive, RPM	20 to 1500

Equipment

Headstock center, center sleeves, drawer keys, tailstock center, face plate, thread chasing dial, tool post, tool post wrench, compound wrench, chuck nut spanner wrench, and instruction book.

Each

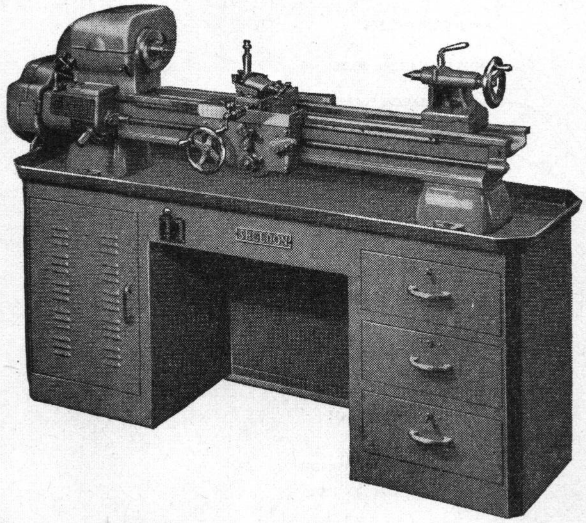
Model 224—Shipping wt. each 1100 lbs. ....$......

Note—24 and 48 in. models; bench and leg models; standard 8-speed drive models also available.

Prices on Request

LATHES

SHELDON "XL" SERIES PRECISION TOOLROOM MODEL



10 in. Swing, 1 in. Collet Capacity

56 in. over all bed length, 35 in. center distance backgeared, precision screw cutting, steel cabinet bench-mounted tool room lathe. Has large adjustable precision tapered roller bearings, 1⅜ in. hole through spindle providing 1 in. maximum draw bar collet capacity and 1⅜ in. maximum spindle nose type collet chuck capacity, full quick change gear box providing thread cutting range from 4 to 224 threads per inch with 48 different changes right and left hand. Power cross and longitudinal feeds, double wall apron, complete V-belt underneath motor drive mounted in cabinet, bench housing leg providing 8 spindle speeds from 50 to 1355 RPM.

Standard Equipment

- Necessary belts
- Headstock center
- Center sleeve
- Tailstock center
- Small dog plate
- Tool post complete
- Necessary wrenches
- Thread chasing dial
- Book "Care and Operation of a Lathe"

No. EXL56B—As described above; shipping wt. each 965 lbs.

Other Bed Lengths

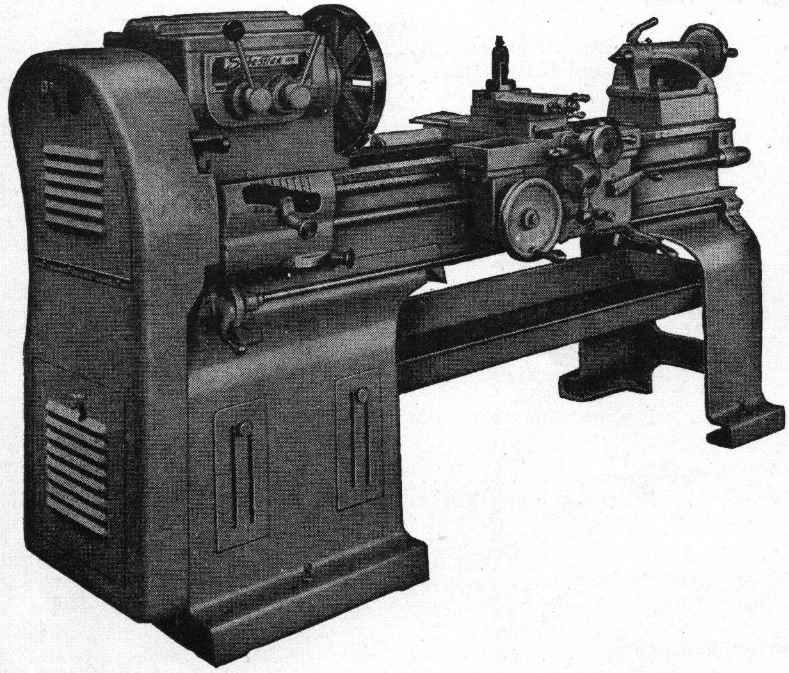
No. EXL38B—38 in. bed, 20 in. center; shipping wt. each 870 lbs.

No. EXL44B—44 in. bed, 26 in. center; shipping wt. each 910 lbs.

Note—Many other sizes and types of Sheldon lathes are available.

Complete Information and Prices on all Models on Request

SEBASTIAN TYPE "R" GEARED HEAD, GENERAL PURPOSE



Leading Features

Timken Tapered Roller Bearings—Preloaded, on all shafts in headstock, including spindle, assuring extra-high accuracy and 20% more power.

Oversize, Heat-Treated Steel Gears—In headstock, assuring longer life and a powerful head.

Automatic Splash Lubrication—For all gears in headstock.

Large Hole through spindle.

Apron Control—For start, stop, and reverse of lathe spindle (standard on 12 in.).

Reverse in Apron—For feeds.

Neutral Point in Head—Permits revolving spindle freely by hand for chucking work.

Cross-Feed and Compound-Rest Dials—Friction type and graduated. No set screws to tighten.

Taper Gibbs throughout.

57 Feed and Thread Changes.

Travel Safety—On compound.

Motor—Fitted in cabinet leg.

Accuracy—.0005 in. at every point of alignment.

16 Spindle Speeds—Covering is progressively increasing and much wider range than that provided by the one-speed motor with high and low switch. Speed ranges are as follows: 12 in. lathe, 19½ to 930 RPM; 16 and 20 in. lathe, 15 to 741 RPM.

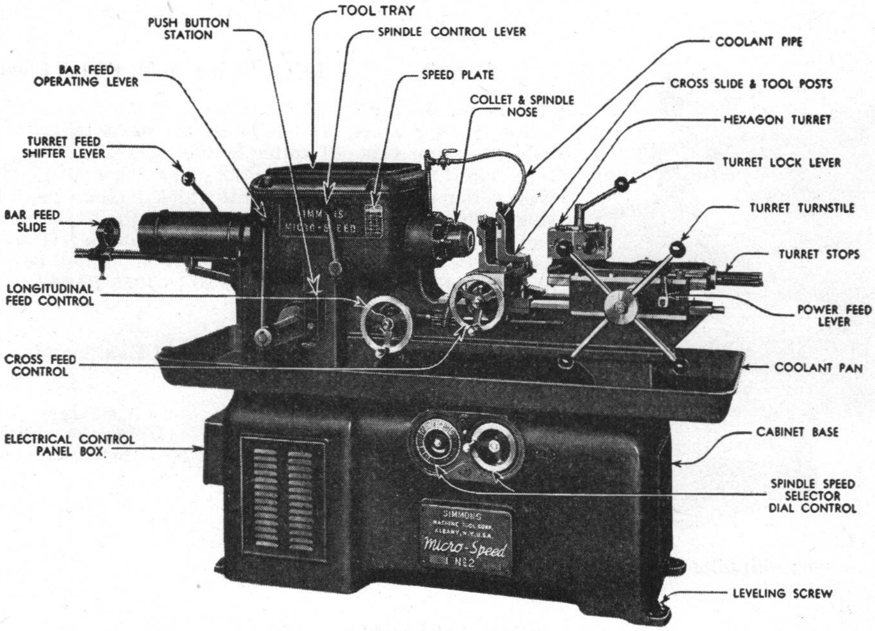
In 12, 16 and 20 in. Sizes

Also available in Gap type beds and blocks, and in Metric Screw, Clutch and Brake, Bed Turret, and Line Shaft Drive types.

Complete Information and Prices on Request

LATHES

SIMMONS "MICRO-SPEED" TURRET TYPE


PUSH BUTTON STATION
TOOL TRAY
SPINDLE CONTROL LEVER
BAR FEED OPERATING LEVER
SPEED PLATE
COLLET & SPINDLE NOSE
COOLANT PIPE
CROSS SLIDE & TOOL POSTS
HEXAGON TURRET
TURRET FEED SHIFTER LEVER
TURRET LOCK LEVER
TURRET TURNSTILE
BAR FEED SLIDE
TURRET STOPS
LONGITUDINAL FEED CONTROL
POWER FEED LEVER
CROSS FEED CONTROL
COOLANT PAN
ELECTRICAL CONTROL PANEL BOX
CABINET BASE
SPINDLE SPEED SELECTOR DIAL CONTROL
LEVELING SCREW
SIMMONS MACHINE TOOL CORP. ALBANY, N.Y. U.S.A. Micro-Speed No. 2
SIMMONS MICRO-SPEED

1¼ in. Bar Capacity, 14 in. Swing

A simple-to-operate, sturdy machine tool, suitable for the rapid production of small precision parts and capable of performing a wide variety of bar and chucking operations.

By means of the "Micro-Speed Drive," spindle speed changes can be made while the spindle is in operation in either direction. This enables quick selection of the speed best suited to the work and the cutting tools, since variations are unlimited throughout the machine range. Proved satisfactory over many years of operation, the "Micro-Speed Drive" consists of a unitized AC motor and variable speed drive mounted on a hinged bracket in the heavy, one-piece cabinet base.

Selector Dial Control, located on the center of the cabinet base, makes any of 1000 different spindle speeds instantly available at the turn of the handwheel. A direct-reading index plate on the headstock shows the spindle speeds obtainable at each position. All electrical controls are standard devices, providing overload and low-voltage protection to the driving motors.

A motor-driven coolant pump, with piping is provided as standard equipment, assuring a constant flow of the coolant at all times.

Specifications

Swing

Over bed, in.	14
Over cross slide, in.	6

Bed

Width of bed, in.	7
Length of ways, in.	31

Automatic Chuck Capacity

Round bar, in.	1¼
Hex bar, in.	$1\frac{1}{16}$
Square bore, in.	⅞
Hole in plunger, in.	$1\frac{9}{32}$

Spindle

Hole, in.	1½
Thread on nose, diam., in. and T.P.I.	2⅜–8

Bearings

Front—Double row Timken precision
Rear—SKF precision straight roller

Spindle Speeds

Back-geared machine, direct drive, RPM	188 to 750
Back gears engaged, RPM	44 to 177

Instantaneous gear change through double throw twin-disc clutch.

Plain machine—

With single-speed motor, RPM	375 to 1500
With two-speed motor, RPM	188 to 1500

Cross-Slide

Total cross travel, in.	5
Longitudinal travel, in.	12
Width of cross slide, in.	4¾

Screw feed standard.
Rack and lever feed optional at no additional cost.

Hexagon Turret

Tool hole diam., in.	1
Tapped holes in turret faces, diam., in. and T.P.I.	$\frac{7}{16}$–14
Tapped holes spacing, C to C	2⅞
Center of tool holes to top of slide, in.	2⅜
Distance across flats of hex, in.	7¼
Effective turning movement at one setting on bed, in.	6
Max. distance end of spindle to turret face, in.	18

Power feeds—
For back-geared machine, .006, .010, .018, .152, .254, .457.
For plain machine, .004, .007, .012, .102, .178, .305.

Motor

Horsepower	3

Reversing push button control, standard.

Weights

	Plain	Back-Geared
Net wt., lbs.	2800	2900
Crated wt., lbs.	3100	3200

Standard Equipment

Includes motor, magnetic reversing control, push-button, automatic collet chuck and wire feed for bar work and 1¼ in. round collet or universal 3-jaw chuck for chucking operations, oil pan, spindle brake, motor driven centrifugal coolant pump and piping, tool tray, selector dial for spindle speeds, complete wrenches.

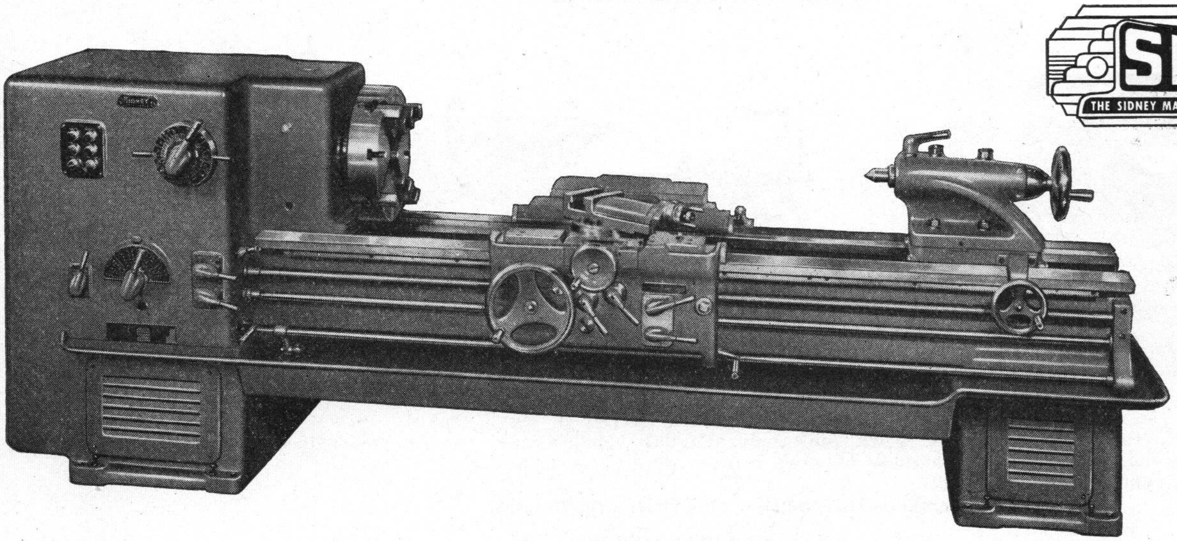
	Each
No. 2—Plain	$.....
No. 2—Back-Geared	.....

Prices on Request

LATHES

SIDNEY MODEL 32 ENGINE

SIDNEY
THE SIDNEY MACHINE TOOL CO., SIDNEY, OHIO, U.S.A.



32-Speed

Built in sizes from 14 to 20 in. nominal swing and center distances as required.

In addition to the 32 speed Model shown, Sidney also makes 16 speed, all herringbone geared headstock lathes from 14 to 32 in. nominal swing with center distances as required.

Lathes with large hole through the spindle and arranged for Oil Country service are also available.

Headstock

The all-herringbone geared headstock provides 32 pre-selective spindle speeds in geometric progression. It is exceptionally rugged, with spindle and intermediate shafts supported by center bearings in addition to the conventional end bearings. Close-coupled spindle bearings in conjunction with rear floating mount eliminates all deflections or misalignments caused by temperature rise. Gears are machined from alloy steel forgings and are heat-treated to a Rockwell hardness of 42 "C." Forced feed lubrication is provided to all bearings and working parts with filter automatically actuated by speed control lever.

The superiority of herringbone gears is well known and universally recognized. This form of tooth provides more tooth contact resulting in greater strength, smoother action, with end thrust eliminated through the double opposed helix angles. Accurate tooth contour, gradual engagement and oblique lines of contact assure correct tooth action and keeps wear to a minimum. This type of transmission is especially suited for carbide cutting tools.

Spindle speed changes are made by internal and external gear tooth clutches. Accurate control of manufacture plus the involute form reduce backlash to a minimum. All clutches slide on multiple splined and ground shafts for ease of operation.

Gear Box

The totally enclosed gear box insures absolute freedom from dirt or other foreign particles to any precision mechanism. This unit contains all the necessary gear combinations to provide sixty changes of threads and feeds. All shafts rotate on anti-friction bearings with gears running constantly in oil. Gears are machined from heat-treated alloy steel, accurately cut and shaved for smooth, quiet operation. This unit is powered from the main spindle of the headstock through end gearing to the drive shaft of the gearbox.

The complete range of feeds and leads is obtainable through the use of the dial control lever conveniently located on the front of the gear box. Dial control affords quick and easy selection of any required thread or feed without stopping or reducing the speed of the spindle.

Apron

The double-wall apron housing provides outer supports for the shafts, all of which are mounted on anti-friction bearings. Gears and shafts are machined from heat-treated alloy steel and are automatically lubricated. An interlocking mechanism prevents use of the feed gearing when half-nuts are engaged. Built-in thread chasing dial mounted at convenient angle to operator's vision.

Control for both longitudinal and cross feed is through independent clutch levers which actuate positive serrated jaw clutches which are provided with an overload safety feature.

Bed

The Sidney Lathe bed, designed for permanent accuracy under the heaviest service, differs from the conventional design in that it is provided with four longitudinal walls and double cross grits spaced at twelve-inch intervals. Correct metal distribution has conclusively proven much greater resistance to deflections and twisting strains. Actual tests show that this design is far superior to the conventional two-wall construction. The two well proportioned outside V ways have greater bearing area to take the downward thrust and accurately guide the carriage while the inside V way and flat control the head and tailstock alignment. Casting is of a steel-nickel-gray iron mixture producing a close grain and smooth wearing surface that insures years of hard service. Hardened and ground steel ways can be furnished.

Tailstock

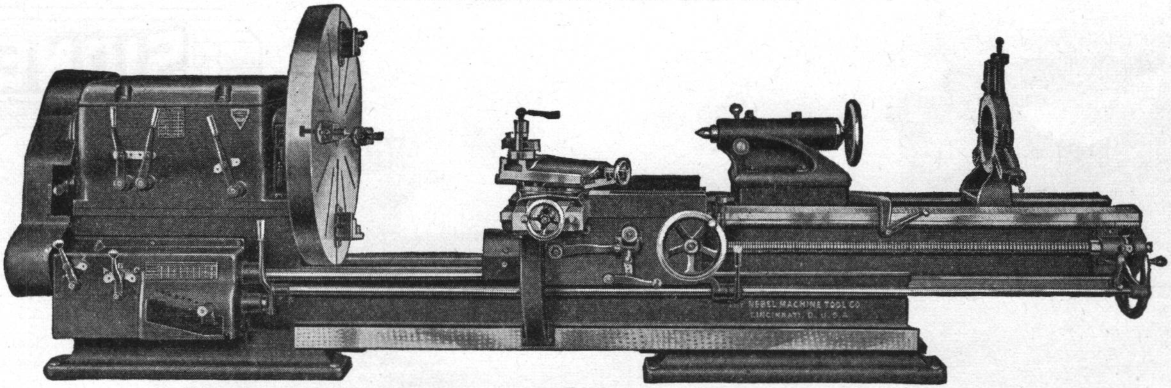
Tailstock is equipped with large base to provide ample bearing area on the bed. The spindle is hardened and ground and is fitted into a honed bore in the tailstock top. Spindle screw is equipped with ball thrust bearings to oppose thrust in either direction. A binder plug arrangement is provided for clamping spindle in position preventing any misalignment. Tailstock is locked in position on the bed by two clamps to insure a rigid support for the work.

To make the tailstock more versatile, a set-over screw is provided to set tailstock top over either side of center for taper turning. Spindle is graduated in inches to indicate the longitudinal movement and is beveled at 30° with spindle center indexed for convenience in tool setting.

Complete Specifications and Prices on Request

LATHES

NEBEL EXTENSION BED GAP TYPE



Showing Bed Extended, Gap Partly Open, with Special Large Face Plate

Gear Head; Motor Driven

For general manufacturing, maintenance work and general repair work. Can be used as gap lathes or regular engine lathes; a large and small swing lathe, giving longer distances between centers than the ordinary lathe.

Also available with cone head, belt driven.

Complete Information and Prices on Request

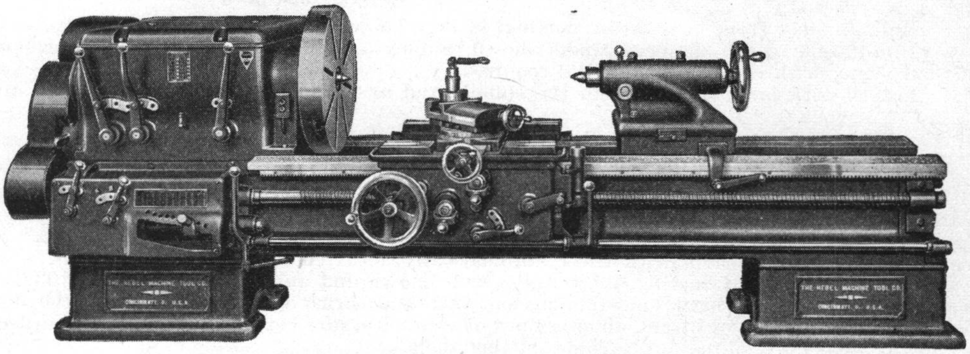
NEBEL GEARED HEAD

Geared Headstock completely equipped with Timken anti-friction bearings. All enclosed massive construction with long bearings on the bed.

Twelve spindle speeds.

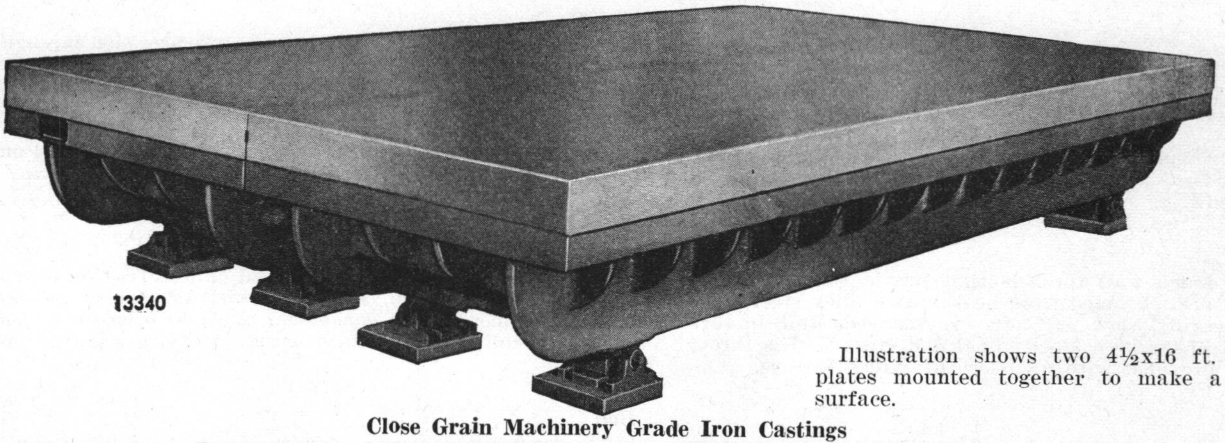
Heat treated steel gears.

Complete Specifications and Prices on Request



SURFACE PLATES

MACHINED ONE-PIECE



13340

Illustration shows two 4½x16 ft. x 24 in. plates mounted together to make a 9x16 ft. surface.

Close Grain Machinery Grade Iron Castings

Leveling jacks are furnished with all 18 and 24 in. depth plates.

Keys and bolts for joining plates in multiple furnished without charge.

24 in. Depth

Surface, ft.	Each	Ship. wt. each, lbs.
4 x10	$.....	10,500
4 x12	.....	12,500
4 x14	.....	14,500
4 x16	.....	15,500
4½x10	.....	11,200
4½x12	.....	13,500
4½x14	.....	15,700
4½x16	$.....	17,000
5 x10	.....	12,700
5 x15	.....	19,000
6 x10	.....	13,000
6 x12	.....	16,000
6 x14	.....	20,000
6 x16	.....	22,000

18 in. Depth

Surface, ft.	Each	Ship. wt. each, lbs.
4x6	$.....	3,300
4x8	.....	6,000

Small Plates

Size, in.	Each	Ship. wt. each, lbs.
20x30x6	$.....	400
24x36x6	.....	450
36x60x5	.....	1,400
36x96x7½	.....	2,150
42x42x9	.....	1,800
48x48x9	.....	2,000

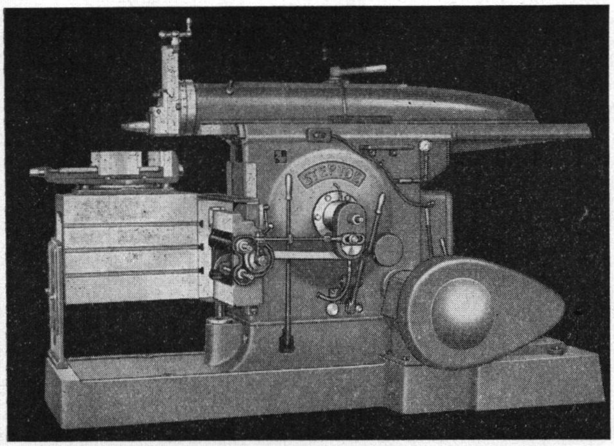
Note—Prices on request for cutting Tee slots, scribing lines, and for scrapping plates.

Note—Structural bases are available for small plates.

Prices on Request

SHAPERS

STEPTOE HEAVY DUTY



Vee Type Ram adjustably gibbed and hand scraped to master gages—oil lubricated under pressure.

Helical bull gear and pinion on precision Timken bearings.

Heavy duty Twin Disc clutch with synchronized ram brake, instant start and stop.

All transmission shafts on Timken bearings.

Alloy steel drive gears, generated teeth, oil lubricated.

Integral involute splined shafts for all sliding gears.

Filtered pressure lubrication to all wear surfaces.

Centralized controls, direct reading speed selection plates.

Extra long feed to tool head.

Automatic power feeds, horizontally and vertically.

Heavy duty, over size vise, graduated to swivel 360°

Sliding back gears on involute splined shaft.

Crossrail gibbed top and bottom to prevent springing under cut.

Micrometer dials for all feeding motions, direct reading.

Large diameter shafts can be keyseated directly through the column.

Direct reading stroke index plate.

Positive outboard table support for all sizes.

Bronze and felt wipers on reciprocating surfaces.

Full length ram bearing in column at any stroke.

One piece lubricated rocker arm block, precision ground.

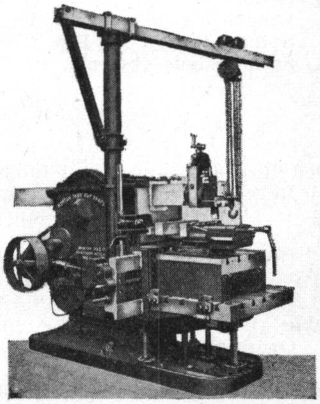
Feeds, speeds, and ram stroke adjustable while in motion.

All types of drives available.

Complete line of accessories, universal table, rapid traverse, power down feed, etc. available.

Catalogs and Prices on Request

MORTON DRAW-CUT

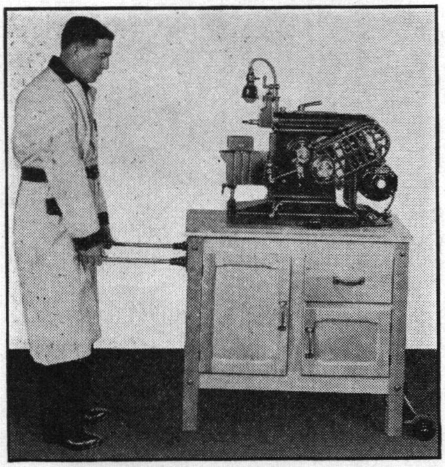


Morton builds shapers of various sizes and types for railroad maintenance, locomotive building and other similar requirements.

The machine illustrated has a 38 in. cutting stroke, 60 in. horizontal travel of crossrail and four elevating screws.

Detailed Information and Prices on Request

AMMCO 7 INCH



Portable Cabinet Model

Complete with swivel vise and wrenches, including 4-step V-pulley, adjustable countershaft, motor driven pulleys and 2 V-Belts with belt guards; ⅓ HP motor, 110 volts, 60 cycle, single phase and with overload switch; mounted on a maple cabinet with casters and handle for portability, and including adjustable lamp, completely wired and ready for operation.

Net weight each 300 lbs.; shipping weight each 400 lbs.

Specifications

Ram

Extreme length of stroke, in.	7¾
Total length of ram, in.	16¾
Length of bearing in main frame, in.	10⅜
Width of bearing in main frame, in.	3⅝
Strokes per minute	40, 70, 115, 180
Speeds	4

Table

Horizontal travel, in.	9½
Vertical travel, in.	4¼
Max. distance from ram, in.	5¼
Min. distance from ram, in.	1⅛
Top, in.	6x4½
Depth table, in.	5⅛
Cross feed range (reversible), in.	.003, .006, .009, .012, .015, .018
Feeds	6

Tool Head

Vertical travel, in.	3¼
Size tool holder, for ¼ in. bit, in.	⅜x⅞
for $\frac{3}{16}$ in. bit, in.	⅜x¾
Diam. tool head, in.	2⅝

Vise

Width of jaws, in.	4
Depth of jaws, in.	1
Maximum opening, in.	4¼
Height of vise over table, in.	2⅝

Power Applications

Adjustable countershaft having 4 step V-pulley with separate adjustment for V-belt and motor belt.

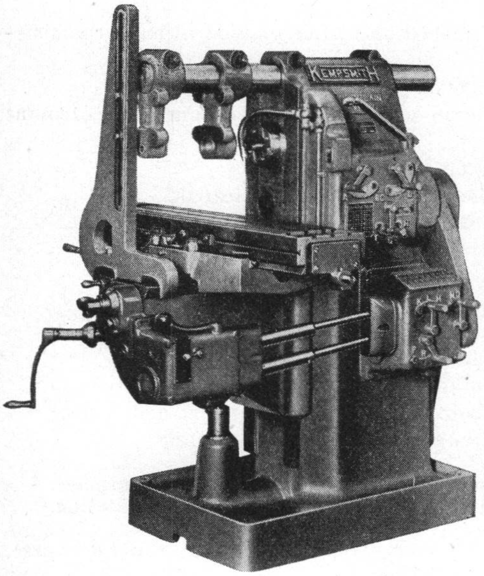
Dimensions of Shaper Only

Length, in.	30
Width, in.	18
Height, in.	24
Net weight of shaper only, lbs.	175

Prices on Request

MILLING MACHINES

KEMPSMITH TYPE "G"



Plain and Universal Models

Designed for toolroom and light production work. Capable of precision performance on tough 3-shift production schedules.

All models have centralized control; 18 speeds and feeds; speed, feed and spindle assemblies mounted fully on ball bearings; knee gib construction; unit construction; available with power rapid traverse.

Standard Equipment

Two arbor supports; semi-steel harness; coolant pipe and piping; swivel vise; draw-in rod; universal dividing head complete with tailstock, centering rest, dog and driver, two index plates, set of change gears for spiral milling and index charts for operating; universal chuck; crank handles and wrenches; motor in base.

Specifications

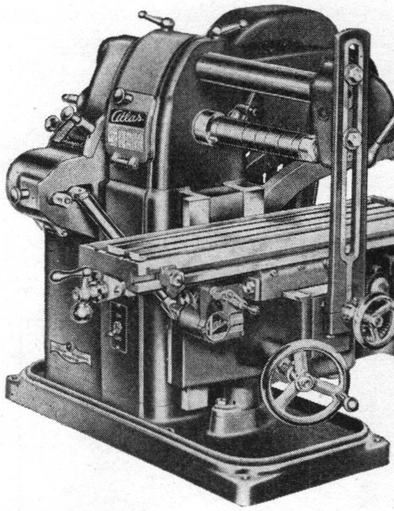
Nos.	1	2	3
Power Feed Range—Lengthwise, in.	22	28	26
Cross, in.	8	10	11
Vertical—All Nos.	plain, 19 in.; universal 18 in.		
Table—Working surface, in.	42x10	45x10	57x11½
Overhanging Arm—All Nos.	Diam. 4 in.; to center of arbor 6¾ in.		
Width—Face of column to brace, in.	20	24	24
Spindle—All Nos.—Standardized taper No. 50. 1⅛ in. diam. hole, 18 speeds; range 18-575 RPM			
Motor—Horsepower	3	3	5
Feed—No. of changes	18	18	18
Range, in. per minute	½–20	½–20	½–20
Universal Chucks—(With Universal machine only)			
Max. opening diam., in.	2¼	2¼	3

Nos.	1	2	3
Universal Dividing Head (With Universal Machine only)			
Swing, in.	10½	10½	13¼
Length between center, in.	22	28	40
Spindle taper hole, B & S No.	10	10	11
Spindle hole through, in.	1 1/16	1 1/16	1¼

Nos.	1	2	3
Floor space			
In direction of spindle, in.	66	66	66
In direc. of table travel, in.	85	97	121
Shipping wt. each, lbs.—Plain	3900	4100	4600
Universal	4200	4400	5000

Prices on Request

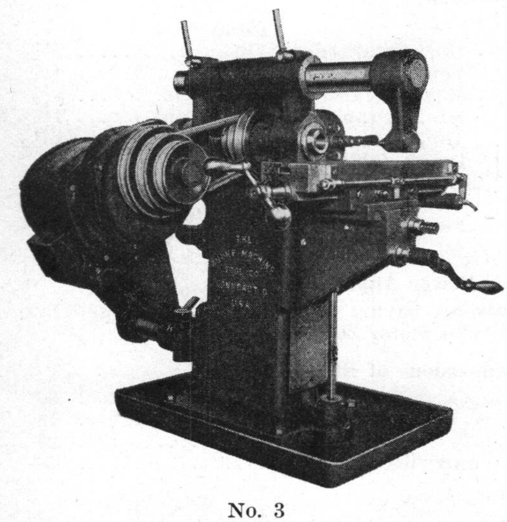
ATLAS No. MFC CHANGE-O-MATIC



Specifications

Feed Range, Longitudinal table travel, in.	10
Reversible automatic longitudinal power feeds:	
Per revolution of spindle, in.	.003, .006, .0125, .025
Range, in. per minute	.186 to 11.250
Cross table travel, hand operated, in.	3½
Vertical table travel, hand operated, in.	6
Center of spindle to table in lowest position	6
Table—Working surface, in. (precision ground)	4½x18
Overall dimensions, in.	4½x18x1¾ thick
T-slots, in.	top, ⅜x⅝x16; side, ⅜x⅝x18
Spindle and Arbor—Eight spindle speeds, RPM	62 to 2870
Timken tapered roller bearings.	
Spindle—1 in. diam., 10-pitch, N.S. threads, 17/32 in. hole through entire length; nose bored for No. 2 Morse taper.	
Arbor diam., in.	⅞ or 1
Center of arbor to underside of overarm, in.	2⅛
V-belt Drive Unit—Backgear ratio	6½ to 1
Backgear shaft and countershaft spindle bearings	Oilite bronze
Motor recommended	⅓ HP, 1725 RPM
Shipping wt. each, lbs.	278

Prices on Request



No. 3

No. 3 BURKE BENCH MILLER

No. 9 B & S taper spindle, heat treated and ground, Timken bearings. Rack and pinion longitudinal feed; longitudinal feed 8 in., traverse feed 3⅜ in., vertical feed 7½ in. Max. distance between center of spindle and table 7½ in. Width of T-slot ½ in. Direct drive from 3-step motor cone by V-belt to spindle cone. Motor: ½ HP standard or gearhead motor or ¾ HP Lima motor. Spindle speeds, 3 with standard or gearhead motor, 12 with Lima motor. Spindle speeds 66 to 2875 RPM. Special table with 3¾x16 in. working surface optional. Shipping wt. each 400 lbs.

No. 4 BURKE UNIVERSAL MILLER

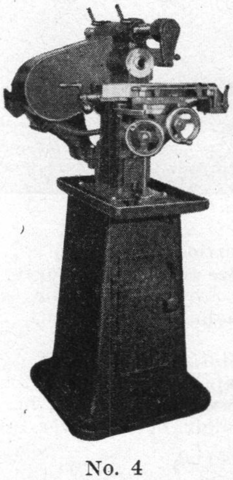
No. 9 B & S taper spindle, heat treated and ground. Timken bearings. Longitudinal feed 10 in. Screw feed for longitudinal, traverse and vertical movements; traverse feed 2 in., vertical feed 7 in. Working surface of table 3¾x20 in. Max. distance between center of spindle and table 7 in.; universal table swings 30° in either direction. Width of T-slot ½ in.

Direct drive, motor recommendations, spindle speeds and range of speeds same for No. 3 above.

Shipping wt. each 500 lbs.

Pedestal—28 in. high; wt. each 200 lbs.

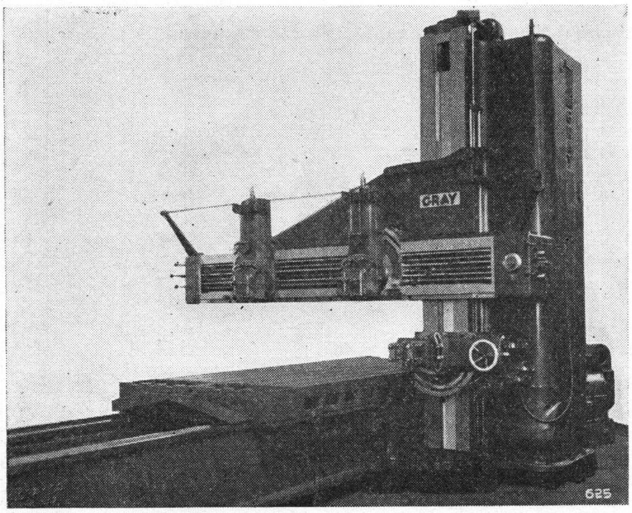
Prices on Request



No. 4

METAL WORKING PLANERS

GRAY



Illustrating 72 in. x 12 ft. Openside

Featuring

Non-metallic table ways.

Loop lubrication.

Space-saver drive with full floating drive shaft.

Counterbalanced rail head slides and power swiveling of harps.

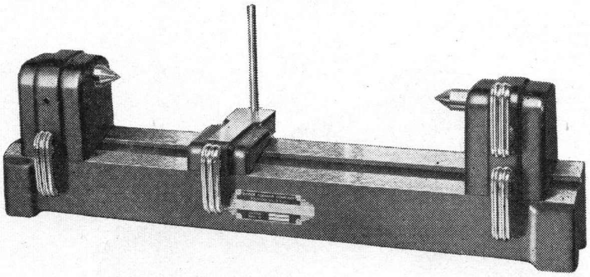
Precision tool point locator.

Many other sizes and types available.

Complete Specifications and Prices on Request

BENCH CENTERS

BARBER-COLEMAN



Barber-Coleman Bench Centers are very useful and practical wherever inspection work is done. They provide the most accurate and economical method for holding cylindrical or circular pieces for inspection. Pieces are held on arbors, as in the case of a gear or gear blank which has a center hole, or parts may be rotated on their own centers, as in the case of shafts, pinion-shafts, plugs, etc. The work is usually inspected by being rotated by hand under a dial indicator which registers the amount of "run-out" or eccentricity. This method of inspection also shows any variations from true circular form of a piece.

Work may be checked axially to determine if there is any side run-out or "camming" action on the sides of shoulders or collars.

There are other purposes for which the Bench Center can be readily used, many of which will be evident on consideration of the inspection work being done in each individual shop.

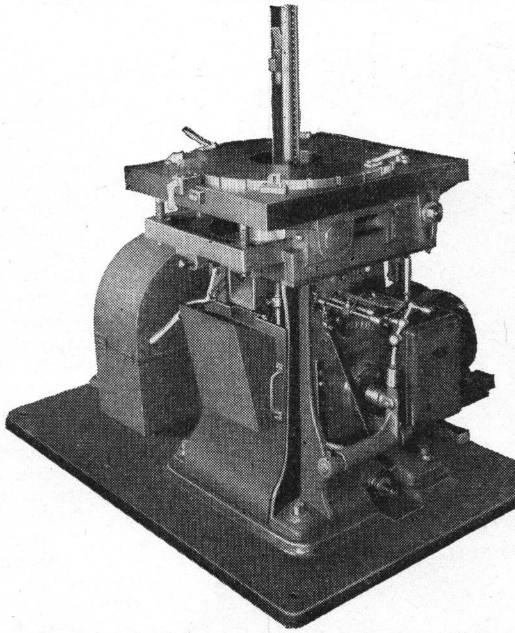
	Each
Bench Center—Max. distance between centers 18½ in., diam. of work overways 6½ in., diam. of work over slide 4¾ in., length of bed 27½ in.; net wt. each 53 lbs.; shipping wt. each 90 lbs.	$......

One in a box.

Prices on Request

KEYSEATING MACHINES

MITTS-MERRILL GIANT



No. 5—Cuts All Standard Keyways

Rugged design for handling heavy work. Adjustable for light work and can be equipped with posts as small as ⅜ in. diameter.

Automatic feeding device furnished makes it possible to cut exact duplicate keyseats of a predetermined depth.

Complete with Special Tappet or Stroke Adjusting Device.

Rack and pinion motion. Automatic relief of cutter. 73x48 in. floor space.

Speed—Speed reducer for changing cutting speeds to 14.7, 11.3 or 9.7 ft. per min.; return speed constant at 29.4 ft. per min.

Capacity—Width of keyseat 0 to 3 in.; length of keyseat 0 to 24 in.

Individual Motor Drive

Machine is furnished with special base and silent chain drive running in oil. Any motor having a speed between 600 and 1800 RPM can be used. If customer furnishes motor we must have dimension print for layout of base and chain drive.

Belt Drive

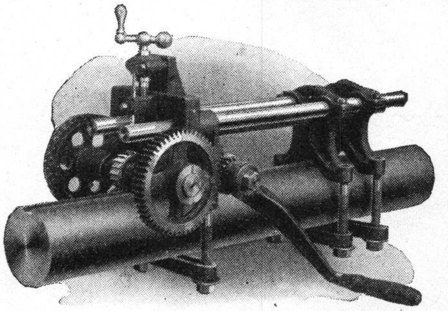
With tight and loose pulleys and belt shifter.

Many other sizes available.

Write for Detailed Information and Prices

PORTABLE SHAFT KEYSEATERS

BURR



Horizontal Spindles Hand Operated

Will mill keyseats in the middle or on the ends of shafting without removing it from its hangers or boxes. It will mill keyseats up to 12 in. long at each setting and as there is a sliding support under the cutters, it cuts without chatter or jar and produces keyseats with straight sides and smooth bottoms.

It is provided with automatic feed while cutting which may be disengaged if desired and the cutter-head fed by hand feed. The cutter-slide is provided with an adjustable depth gauge showing the depth being milled.

A set of milling cutters which used singly or combined will mill all widths from ¼ in. to widest of machine's capacity, is furnished as well as all necessary operating equipment.

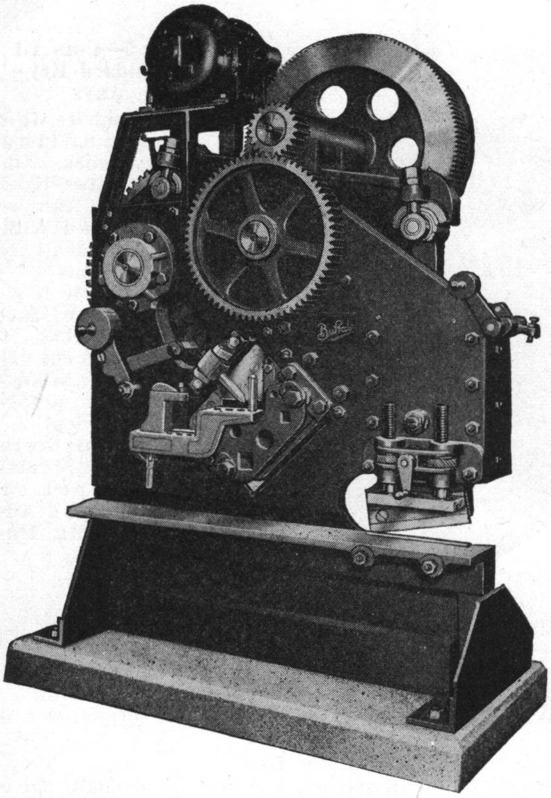
Nos.	Each	Will mill at each setting, in.	No. of cranks	No. of cutters in set	Mills widths, in.	Ship. wt. each, lbs.
1	$.....	12	1	5	¼-1⅛	110
1A	.....	12	2	5	¼-1¼	125
2	.....	12	2	6	¼-2	250
3	.....	12	2	7	¼-2½	390

One in a box.

Note—Available motor driven; prices on request.

UNIVERSAL SHEARS

BUFFALO



No. 2½

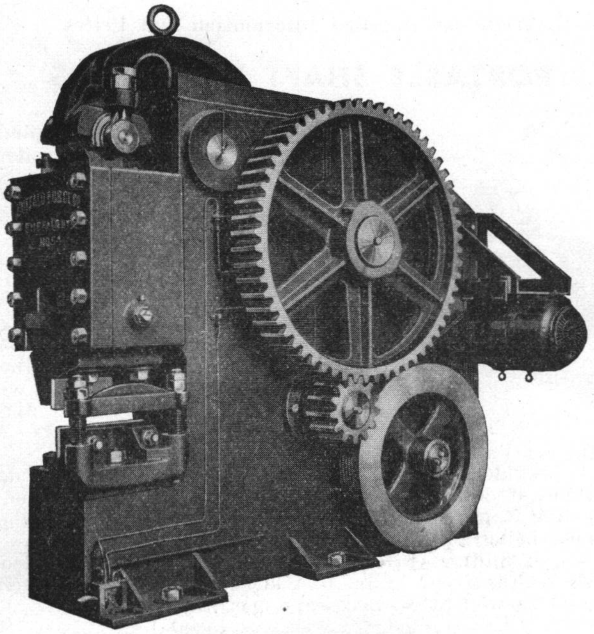
Welded Steel Plate Frame; Single Plungers

Nos.	**0**	**½**	**1½**	**2½**
Slitting Shear				
Plates, in.	⅜	½	⅝	¾
Plates, trim, in.	½	⅝	¾	⅞
Flats, standard knives, in.	4x½	6x⅝	6x¾	8x⅞
Flats Special upper, in.	1½x½	2x⅝	2½x¾	3x⅞
Flats Knife, in.	7x3/16	8x5/16	10x⅝	12x⅜
Trim, angles, in.	2½x⅜	3x½	4x⅝	6x¾
Length, knives, in.	8	10	12	14
Bar Cutter St'd. Knives				
Rounds, in.	1¼	1⅝	1⅞	2¼
Squares, in.	1⅛	1½	1¾	2
Angles, square, in.	3x⅜	4x½	4x9/16	6x½
Angles 45° mitre, in.	2x5/16	3x5/16	3x⅜	4x½
Tees, square, in.	2½x¼	3x⅜	4x⅜	4x5x½
Bar Cutter Special Knives				
Beams and Channels	4″–7½#	5″–12¼#	6″–14¾#	9″–21.8#
Channels	5″–6½#	7″–12¼#	8″–13¾#	10″–20#
Angles, square, in.	4x4x¼	3½x6x5/16	5x5x⅜	3½x7x½
Angles, square, in.	3x4x5/16	3½x5x⅜	4x6x⅜	....
Angles, flare, in.	4x4x5/16	5x5x⅜	6x6x7/16	6x6x⅝
H. Column	....	....	4″–13.8#	6″–20#
B Beams	....	....	....	9″–20½#
Number of strokes	36	30	25	28
Height of strokes, in.	⅞	1⅛	1¼	1½
Flywheel, RPM	225	225	200	400
Pulleys, in.	12x2½	16x3	20x4	20x4
Size motor, HP	2	3	5	10
Length, in.	36	42	55	60
Width, in.	22	26	32	33
Height, in.	50	67	76	95
Ram pressure, tons	27	48	62	83
Thickness frames, in.	1⅝–9/16	2–⅝	2¼–¾	2⅝–13/16
Weight each, lbs.	1650	2750	4300	6000

Prices on Request

SINGLE END SHEARS

BUFFALO



Capacities with Square Coping Tools

Interchangeable with shear blades.

Machine Nos.	**45**	**46**	**47**	**48**
Angles, in.	3½x⅜	4x7/16	4½x½	5x½
Beams, in.	3 to 6	4 to 8	4 to 9	5 to 10
Channels, in.	3 to 5	4 to 7	4 to 8	5 to 9

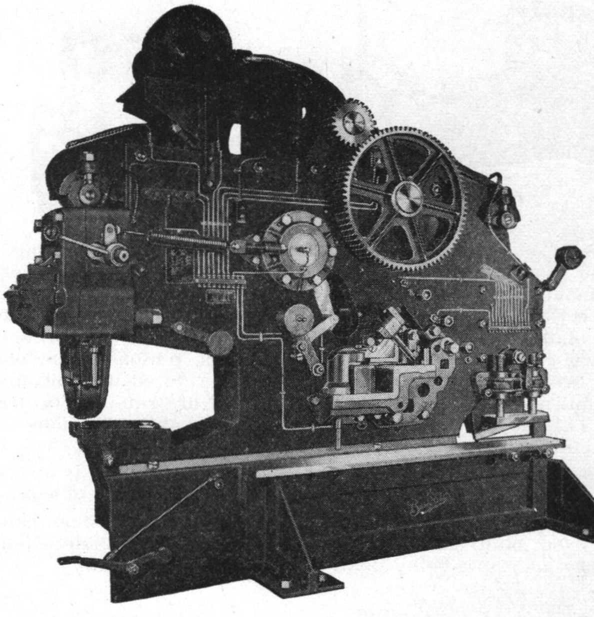
Capacities with 90° Notching Tools

Angles	2x¼	2½x5/16	3x⅜	3½x⅜

Complete Description, Specifications and Prices on Request

COMBINATION SLITTING SHEARS, PUNCHES AND BAR CUTTERS

BUFFALO

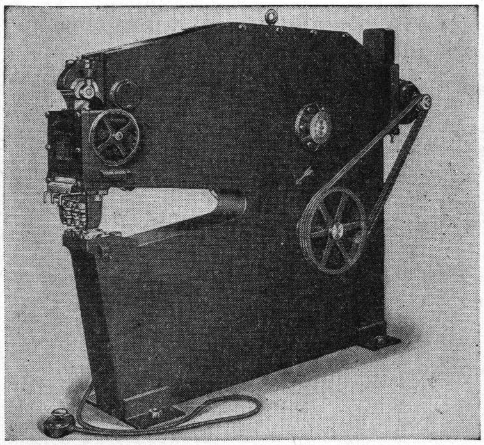


A Universal Iron Worker that reduces metal fabricating costs by punching and cutting a wide variety of sheets and shapes.

Complete Description, Specifications and Prices on Request

VERTICAL PUNCHES

BUFFALO SINGLE END



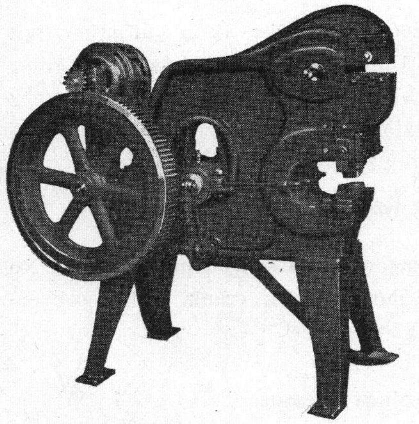
Channel and Beam Capacities for Punching

Machine Nos.	Distance between front edge and center of die, in.	Beams In flange, in.	Beams In web, in.	Channels In flange, in.	Channels In web, in.
Regular Die Holder					
44	½	3 to 7	3 to 12	3 to 8	......
45	$\frac{1}{16}$	4 to 10	4 to 20	4 to 12	7 to 15
46	⅞	6 to 12	5 to 24	6 to 12	4 to 15
47	$\frac{15}{16}$	7 to 18	5 to 24	7 to 18	7 to 18
48	1$\frac{1}{16}$	9 to 24	6 to 24	9 to 18	6 to 18
50	1$\frac{3}{16}$	12 to 24	7 to 24	10 to 18	7 to 18
Special Die Holder					
44	⅜	......	.....	.....	3 to 12
45	$\frac{7}{16}$	3	3	3	3 to 6
46	½	3 to 5	4	3 to 5	......
47	$\frac{11}{16}$	4 to 6	4	4 to 6	4 to 6
48	$\frac{11}{16}$	5 to 8	4 to 5	5 to 8	4 to 5
50	¾	6 to 10	5 to 6	6 to 9	5 to 6

Complete Specifications and Prices on Request.

COMBINED POWER PUNCHES AND SHEARS

BELOIT



Plain Jaw, Motor Drive

Standard equipment includes punching attachment, adjustable stripper, back gauge, shear blades for flat and round bars, and 1800 RPM motor.

Also available with tight and loose pulley for belt drive.

Throat depth, in. ..	8	Length shear blades, in. ...	6½
Cap. punch, in. ...	¾ thru ¾	Ht. of gap, in.	6
Std. punch, No. ...	5	Stroke, in.	$\frac{15}{16}$
Std. die, No.	5	Fly wheel, RPM	225
Shears flats, in. ..	¾x4 or ⅝x6	HP required	5
Shears rounds, in. .	1½	Length over all, in.	64
		Width over all, in.	46

Each

No. 54—With 5 HP motor; wt. each, skidded, 3250 lbs. ..$......

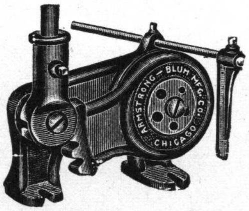
Note—Other sizes available, either motor driven or with tight and loose pulleys.

Prices on Request.

ROD CUTTERS

MARVEL

Hand Operated



For rapidly cutting off round bars, rods or wire with a single stroke of the lever.

Work is passed through one of five openings in a pair of matched tool steel blades. One blade is held stationary in the body of the cutter and the work is sheared off by rotating the other blade about a center pivot pin with a very powerful compound lever. Cut ends remain round and true.

Blades are high grade, heat-treated tool steel. Can be easily replaced when worn out.

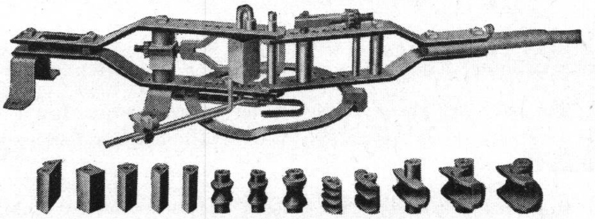
An adjustable length gauge is furnished for convenience in cutting duplicate pieces.

Nos.	Each	Cuts round rods, diam., in.	Wt. each, lbs.
5	$21.00	⅜, $\frac{5}{16}$, ¼, $\frac{3}{16}$, ⅛	15
6	36.00	⅝, $\frac{9}{16}$, ½, $\frac{7}{16}$, ⅜	45
7	62.00	⅞, ¾, ⅝, 1/20, ⅜	110

One in a box.

PIPE, BAR AND ANGLE IRON BENDERS

HOSSFELD UNIVERSAL



Wrenchless Type

No other bender on the market like it.

It will neatly, quickly, and accurately handle the hundred and one different bending jobs that come up continually in maintenance and production work. It takes the place of half a dozen different special machines and takes up no more shop space than a common vise. It is always ready for instant use, as being "Wrenchless," it can be adjusted in a moment for any kind of a bend. This makes it just as efficient on a repair job as it is on production work where a thousand bends of a kind are turned out.

Regular Equipment—Includes set of general purpose pipe dies for bending to any degree all sizes of standard pipe and conduit up to 2 in. inside diameter.

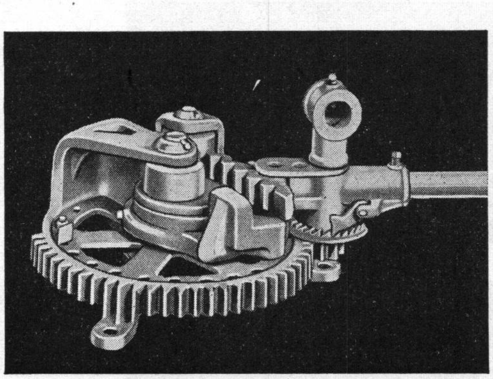
Each

No. 2—Complete; ship. wt. each 215 lbs. $97.50

One in a box.

BAR BENDERS

C. H. & E.



Developed for use on the job. Constructed as light and simple as possible, yet strong enough to stand up under severe use.

The No. 6-A has a bending capacity up to 1¼ in. twisted bars or 1½ in. round bars. Will make a complete U bend of 180 degrees. Radius to inside of bar is 1½ in. Adjustable clamp automatically fits itself to thickness of the bar, holding the bar securely. A ratchet holds bar from springing back while bending.

Small bars can be bent by one man using direct leverage; large bars by two men using the back gear attachment.

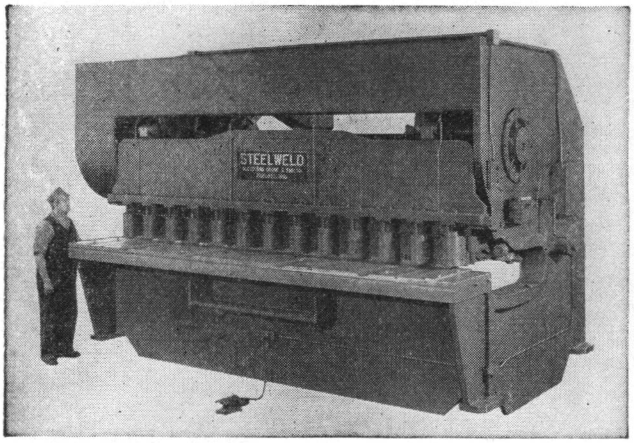
Each

No. 6-A—With handle; wt. each 250 lbs. $145.00

One in a box.

POWER SQUARING SHEARS

CLEVELAND STEELWELD



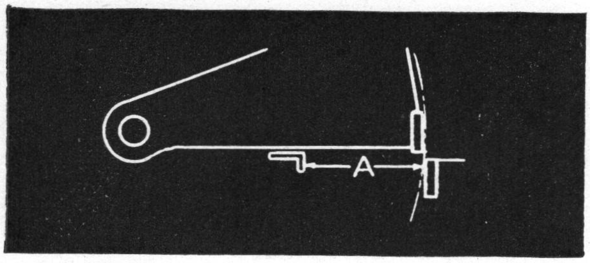
Pivoted Blade

Steelweld shears are entirely different in cutting principle from all other shears now on the market. They have features never before available. They offer real advantages which speed production and cut costs.

Not only are these machines easier to operate but their design assures smooth, straight cuts to hair line accuracy for years. Their construction is extra heavy, and all modern features are incorporated to provide for ease of operation, minimum maintenance and long life.

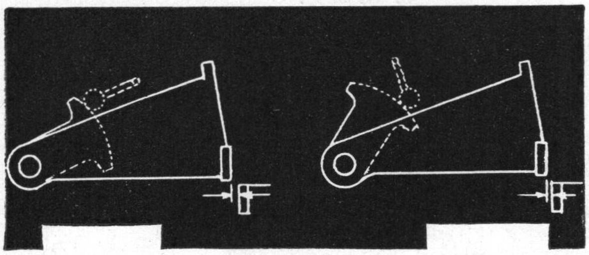
In every section of the United States as well as abroad, Steelweld Shears are serving faithfully. They have been tried and proven in many plants. Users who know shears of all kinds have been wide in their acclaim of these unusual heavy-production machines.

Three Outstanding Features



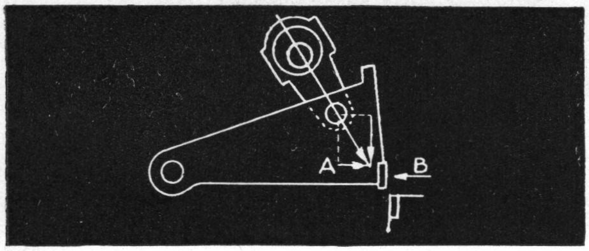
1—Upper Knife Travels in Circular Path

Blade turns on pivot pins. No guides and slides, as in guillotine type shears, to wear and cause inaccuracies. Upper knife swings away from lower one, increasing distance "A" from back gauge to stationary knife, thereby permitting sheared pieces to drop freely without binding.



2—Easy Knife Adjustments

Knife clearance easily and quickly made to suit every plate thickness. No bolts to loosen; no parts to move. Simply turn a crank within convenient reach.



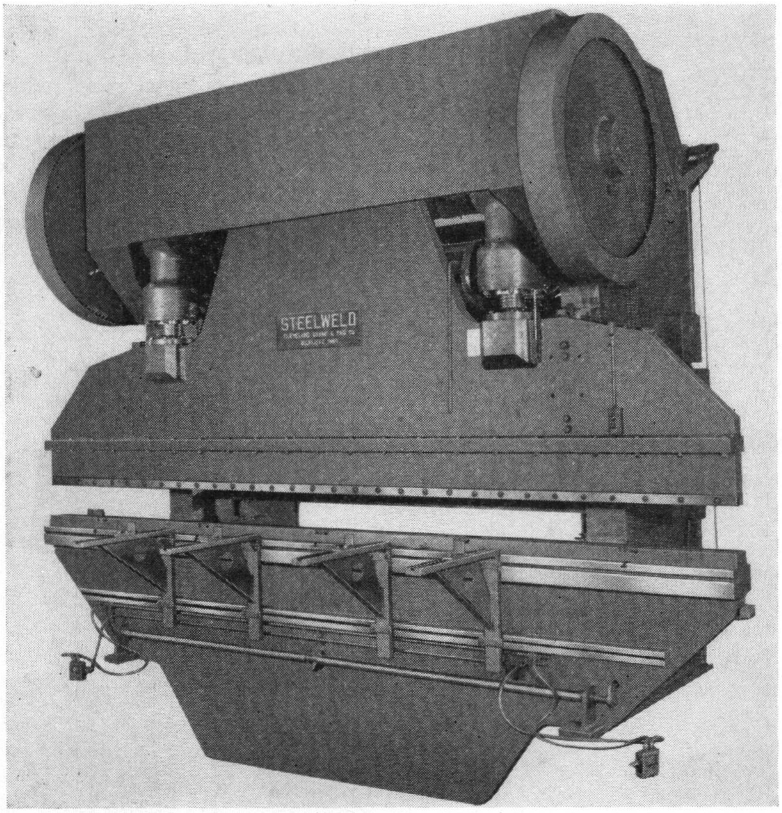
3—Counteracting Shear Pressure

The shearing force is so applied that its horizontal component "A" will approximately equal and counteract pressure "B" that develops in the knives during shearing, tending to spring them apart. This reduces the load on the blade pivot pins to a negligible amount and assures long, trouble-free life at these points.

Write for Detailed Information on a Steelweld Shear for Your Requirements

PRESSES

CLEVELAND STEELWELD



Powerful—Precision-Built

For Plate of Thickness to One Inch and Lengths to 20 Feet

Cleveland Steelweld Presses are versatile tools that do many types of work quickly and easily. With various jigs; dies and tools available or that can be developed for special purposes, a wide range of work can be preformed on steel, aluminum, and the many alloy metals.

Bending, forming, blanking, drawing, rubber-forming and multiple-punching are easily done. Several operations may be performed at each stroke of the ram by passing the work successively through various dies set in positions along the bed of the machine. Taper and conical shapes are easily made with standard bending dies by use of the ram-tapering mechanism.

Data Required for Operation

In placing an order for a Cleveland Steelweld Press it is essential that the following information be given:

1—Size plates (thickness and length) to be bent and their tensile strength.

2—Power available (AC or DC, volts, phase, cycles).

It is helpful to know exactly the nature of the work for which the machine will be used. Often we are in a position to offer suggestions which will be found of value to the user.

Available in a Wide Range of Sizes
Complete Specifications and Prices on Request

CYRIL BATH STURDYBENDER

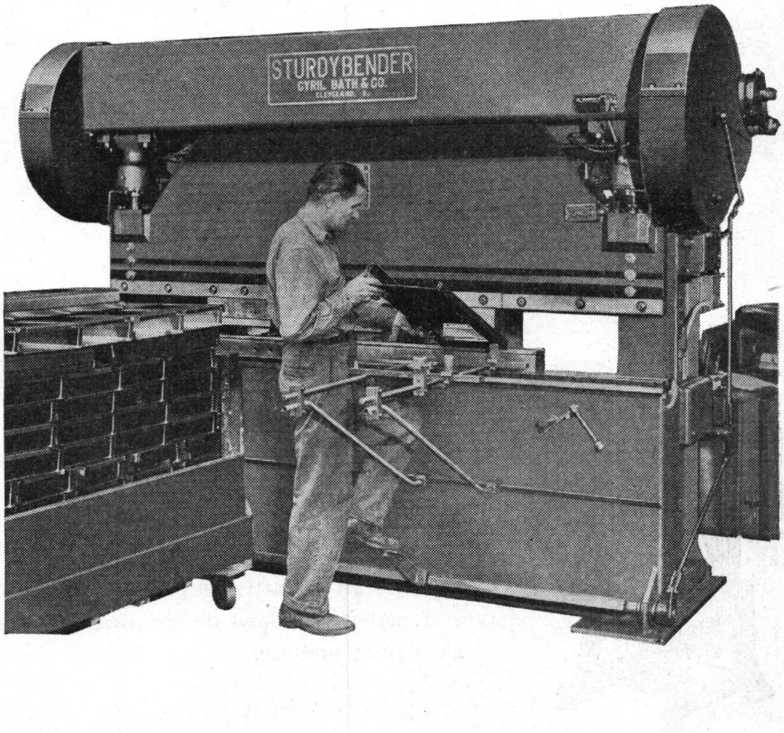
A Tough Universal Press Where Punching, Blanking, Drawing, and Multiple Operation Can Be Adequately Handled on a 24-Hour Production Basis

The illustration shows a Sturdybender 8 ft. press arranged with progressive dies for performing several piercing and forming operations on one part, either simultaneously, by several operators or in succession by a single operator.

Various sizes and models of presses for many requirements are available.

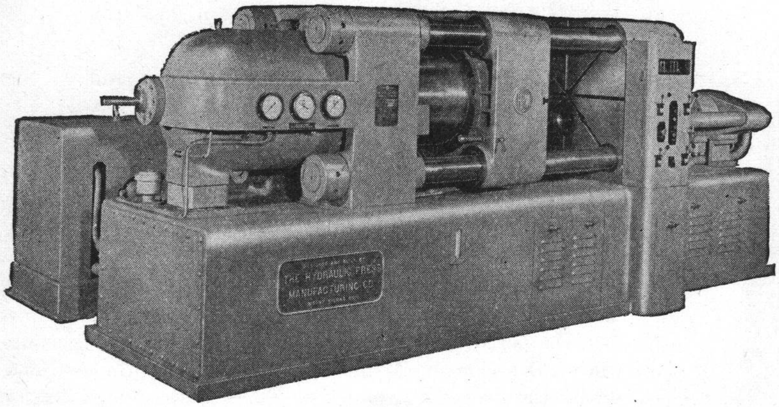
Note—Same data for quotation required as on above.

Detailed Information and Prices on Request



METAL DIE CASTING MACHINES

H-P-M



Hydraulically Operated

For mass production of non-ferrous metal parts, which after cast require little or no machining.

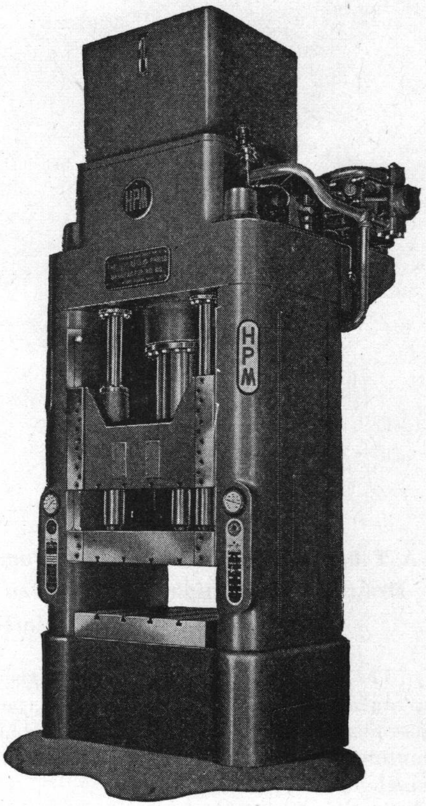
Illustration shows cold chamber type for casting aluminum, magnesium and copper base alloys. Metal to be cast is manually ladled into injection chamber.

Also available in submerged plunger type for casting low melting point alloys of zinc, lead, tin and antimony.

Complete Specifications and Prices on Request

METAL DRAWING PRESSES

H-P-M



Hydraulically Operated

Illustration shows the H-P-M double-action, closed upright type hydraulic press for blanking and drawing sheet metal parts, using either single or double-action dies. Available in a large range of sizes.

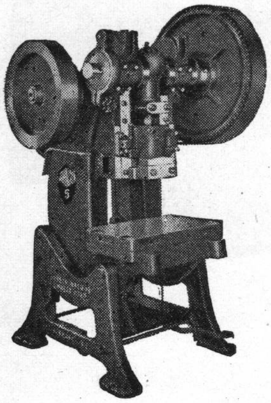
Space limitations prevent our showing more than these two basic types of H-P-M Presses.

An H-P-M Hydraulic Press is available to meet your particular requirements.

Complete Information and Prices on Request

INCLINABLE POWER PRESSES

JOHNSON



½ to 56 Ton Capacity

Flywheel and Back-Geared Types

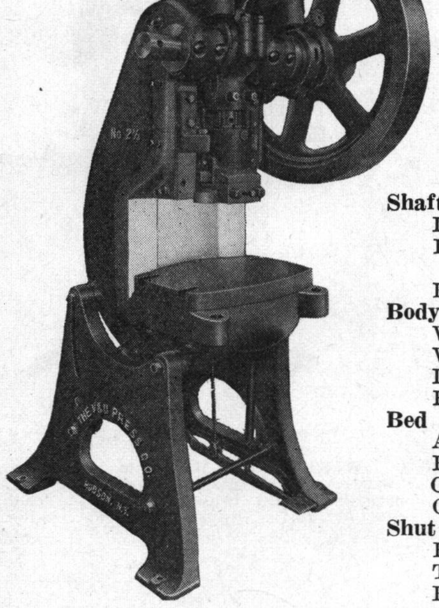
4 in. Stroke

Have all the attributes for economical operation and long, trouble free service life that proper selection of materials, sound design, careful workmanship, close inspection, and long experience with pressing of metals can produce.

Outstanding Features, Complete Specifications and Prices Furnished On Request

INCLINABLE PUNCH PRESSES

V. & O. OPEN BACK



The "S" Line Inclinable Type Presses are made in a number of sizes in capacities from 5 to 105 tons pressure. They have in them all that careful workmanship, close inspections, the proper selection of materials and long experience with pressed metals can produce. Years of practical application have confirmed the soundness of their design and of the engineering principles they embody.

Capacity 25 Tons Pressure

No. 2½—**Plain**—32 in. diam. flywheel, 4¾ in. face; wt. of flywheel 525 lbs.; flywheel speed 90-125 RPM; wt. complete 2650 lbs.

No. 2½—**Geared**—24 in. diam. balance wheel, 3½ in. face; wt. of balance wheel 225 lbs.; balance wheel speed **360 RPM**; ration of gearing 6 to 1; 60 strokes per minute; wt. complete 3150 lbs.

Additional Specifications of No. 2½

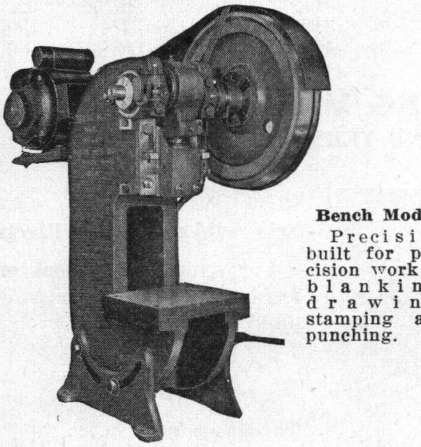
Shaft	
Diam. at bearings, in.	2¾
Diam. at eccentric (std. stroke), in.	4⅞
Extends beyond frame, in.	4¼
Body	
Width of opening in back, in.	10½
Width between gibs, in.	6⅞
Degree of inclination, degrees	30
Ht. bed to center of shaft, in.	32½
Bed	
Area of bed, F-BxR-L, in.	14½x20½
Rectangular opening, in.	7x10
Circular opening, diam., in.	10
Center of slide to back, in.	7
Shut Height	
Bed to slide, SDAU any stroke, in.	9½
Thickness of bolster, in.	2
Bed to ways, in.	13¼

Stroke	
Standard stroke, in.	2
Max. stroke with crank, in.	5
Slide	
Area of slide, F-BxR-L, in.	6⅞x6$\frac{11}{16}$
Length of slide ways, in.	28
Hole for punch shank, diam. and depth, in.	1½x2½
Adjustment, std. stroke, in.	2
Floor Space	
Legs, F-BxR-L, in.	36¾x30¾
Over all, F-BxR-L, plain, in.	47x38
Over all, F-BxR-L, geared, in.	47x49
Bed to floor, in.	32
Height over all, in.	80½
Motor	
HP and RPM, plain	2-900
HP and RPM, geared	2–1800
Torque	Normal

Prices and Complete Specifications on Other Models on Request

INCLINABLE PUNCH PRESSES

PRESS-RITE OPEN BACK



Bench Model

Precision built for precision work in blanking, drawing, stamping and punching.

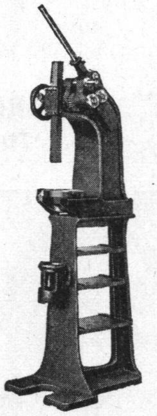
No.	0
Capacity, tons	5
Diam. crankshaft, in.	
at bearing	1⅛
at pin	3
Standard stroke, in.	1¼
Max. stroke available, in.	1½
Adjustment of slide, in.	1¼
Stroke down, adjustment up	
bed to slide, in.	7
bolster to slide, in.	6
Bolster thickness, in.	1
Bolster area, F-BxR-L, in.	7x8½
Opening in bed, oblong, in.	3⅜x6¼
Back from center of slide, or depth of throat, in.	4
Opening in back	3⅜
Area of slide, F-BxR-L, in.	2¾x3½
Hole in slide, diam., in.	1
Floor to center of crankshaft, in.	24½
Flywheel speeds, RPM	138
Flywheel, in.	14x2¼
Wt. of flywheel, lbs.	60
Motor required, 1140 RPM	⅓ HP
Ship. wt. each, lbs.	300

Also available in floor models in capacities from 5 to 30 tons.

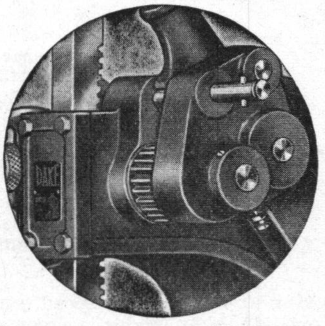
Prices on Request

ARBOR PRESSES

DAKE

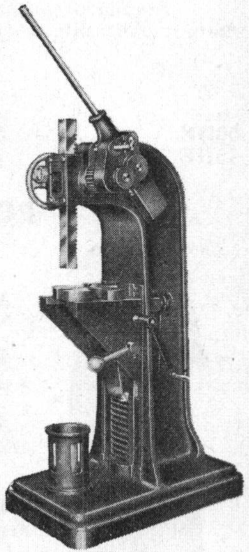


No. 2 with Pedestal



Compound Leverage Mechanism

Permits the operator to apply great pressures with minimum effort. Single or compound leverage quickly obtained by inserting or extracting sliding pin. Lever operates through the compound mechanism to step up the pressure applied to the ram.



No. 4

Combination Ratchet

Hand-operated brake holds ram in any position. Position of handle is adjustable with a ratchet. Counterbalanced weight raises the handle to uppermost normal position.

Nos. 2, 2B, 2½ and 3 have fixed machined table surfaces for work support. No. 4 has table with rack and pinion adjustment. No. 5 and 6 have two swinging tables for various heights.

Nos.	Largest diam. work, in.	Largest diam. arbor, in.	Cap. over table, in.	Cap. over table plate, in.	Size and length of ram, in.	Bench space, in.	Floor space, in.	Ht. of press body, in.	Leverage ratio	Approx. pressure, tons	Ship. wt. each lbs.
2B	15½	5½	15	13¾	1½x1½x19	8½x16	18x23½	26½	66-1	6	260
2½	16	3	21	19¾	1½x1½x26	8½x16	18x23½	33	66-1	6	315
2	15½	3	14½	13¼	1½x1½x19	8x15½	18x23½	26	66-1	6	290
3	20	5	18½	17	2 x2 x24	13x21	21x30	36	112-1	12	640
4	20	5	24¾	23⅛	2 x2 x24	....	22x29	58	112-1	12	1450
5	25	5¼	46	44⅜	2 x2 x24	....	24x33	64	150-1	15	1780
6	37	8	46	45	2½x2½x26	....	27x43	72	220-1	15	3010

Pedestal Only

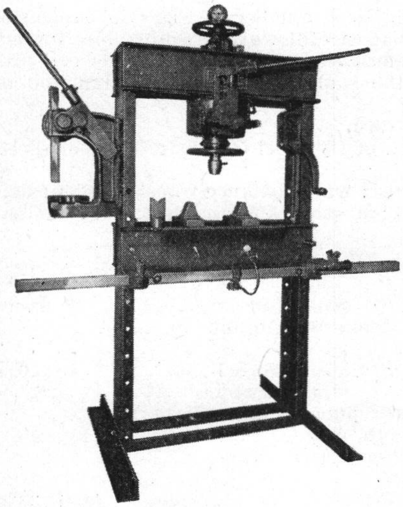
For Presses Nos.	**2B**	**2½**	**2**	**3**
Height pedestal, in.	33	33	33	33
Wt. each, lbs.	225	225	225	375

Prices on Request

Open stock.

HYDRAULIC PRESSES

DAKE



Nos. 50H and 70H

Frame—Rigid, arc-welded steel, reinforced throughout.

Workhead—Self-contained, compact unit, movable for positioning over work. Locked in position by handwheel.

Auxiliary Ram—Screw type, advanced quickly with handwheel.

Release Valve—Speedily and automatically returns ram to starting point.

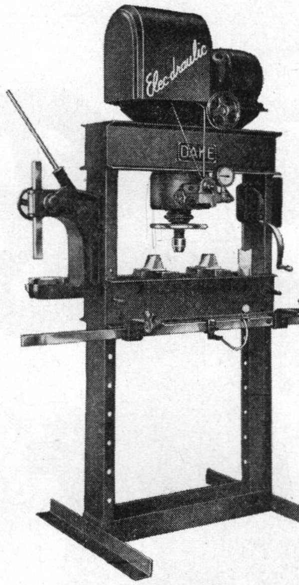
Easily Adjustable Table—Has crank and self-locking worm and locking pins.

Pressure Gauge—Large dial type; graduated in tons.

Hand Operated

Detachable pump handle in correct position for easy operation.

Standard equipment includes: structural steel frame, hydraulic workhead, 2 table plates, table lifting device, two V-blocks, one V-ram nose for straightening, one round nose for pressing and pressure gauge.



Nos. 50HE and 75HE

Nos.	Each	Cap., tons	Ht. over all, in.	Floor space, in.	Travel of table, in.	Travel of ram, in.	Travel of screw, in.	Width between upright (largest diam. work), in.	Width between table channels (largest arbor), in.	Maximum distance ram to table in lowest position, in.	Wt. each, lbs.
50H	$.....	50	85	36½x43½	40	4	7	31⅝	7¼	42¼	820
70H	.....	70	87	36½x55	36	4½	7¼	44	8¼	38½	1,365

"Elec-Draulic," Electrically Operated

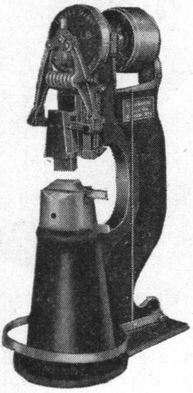
Constant running motor, no hand pumping. Fingertip controls, all within easy reach of the operator. Any desired pressure can be maintained by the fingertip control.

Standard equipment includes: 3-phase, 60 cycle, 220-440 volt motor NEMA base drilling; reset type switch; structural steel frame; hydraulic workhead; 2 table plates; table lifting device; 2 V-blocks, one V-nose and one round nose.

Nos.	Each	Cap., ton	Max. speed of ram, in. per min.	Motor, HP	Motor, RPM	Floor space, in.	Height over all, in.	Travel of table, in.	Travel of of ram, in.	Travel of screw, in.	Width between uprights, in.	Width between table channels, in.	Max. dist. ram to table, in.	Wt. each, lbs.
50HE	$.....	50	6	3	1800	36 x43½	96	40	4	7	31⅝	7¼	37¼	1500
75HE	.....	75	6	5	1800	36½x55	102	36	4½	7¼	44	8¼	38½	1800

POWER HAMMERS

LITTLE GIANT



Belt Drive; Operate with Rapidity and Precision

Smooth running at top or slow speed, striking a heavy or light blow under perfect and continuous control. Quickly adjustable to all sizes of material within their respective range, the five models shown represent the utmost in hammer efficiency.

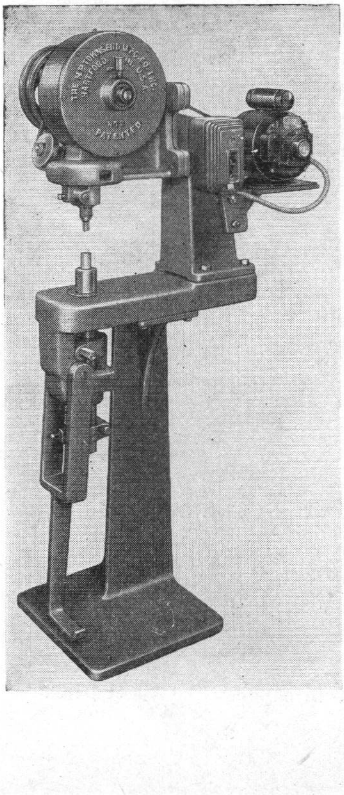
Dies are of high carbon alloy tool steel, accurately machined and carefully heat-treated, fitted into machined slots and held in position by taper keys. All five models are equipped with removable die or anvil block.

Size, lbs.	**25**	**50**	**100**	**250**	**500**
Forg. cap., gen. work, in.	2	3	4	6	7
Handles flats edgewise without adjust., in.	3	4	5	15	15
Max. capacity, in.	6	6	7	15	15
Upper die size rd. face, in.	3x1½	3½x1¾	6x3	8x3½	10x4½
Flat face, in.	3x2	3½x2½	6x3	8x3½	10x4½
Lower die face, in.	3x2	3½x2½	6x3	13x3½	15x4½
Max. length stroke, in.	8	11	13	20	24
Height throat, in.	6	6	7	12	14
Depth throat, in.	10	14	14	14	15
Belt pulley, in.	10x3½	12x4	14x5	18x8	24x9
Ht. over all, in.	58	63½	70½	80	97
Floor space, in.	16x27	20x30	28x42	30x34	32x62
RPM	375	325	275	195	160
HP required	1	2	3	7½	15
Wt. each, lbs.	870	1600	3000	5000	10000
Each	$.....	.....	.....	.....	.....

Note—Also available motor driven; prices on request.

RIVETING MACHINES

TOWNSEND VERTICAL HEAD



Sets Solid or Tubular Rivets

For riveting flat work or any odd shape on suitable anvil.

Specifications

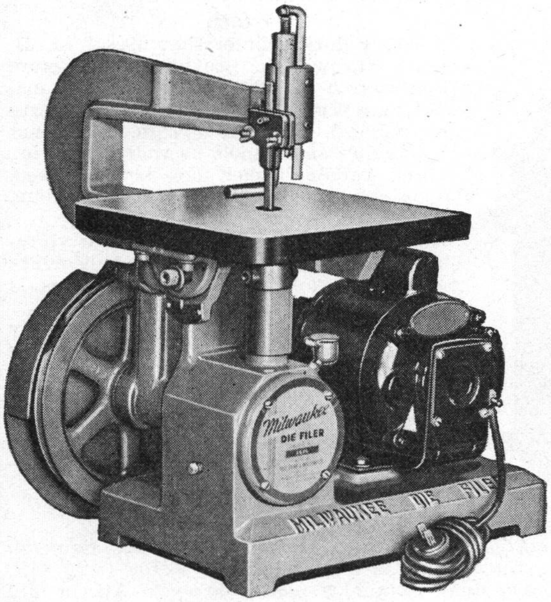
Throat or gap, in.	10¼
Anvil operating travel, in.	1½
Anvil adjustment, in.	1½
Max. distance between hammer and anvil, in.	3
Capacity, diam. rivets, in.	⅛ to 3
	Each
No. 2 Standard — Net wt. each 450 lbs.	$....

Note

Other sizes and models available. Prices on request.

DIE FILERS

MILWAUKEE



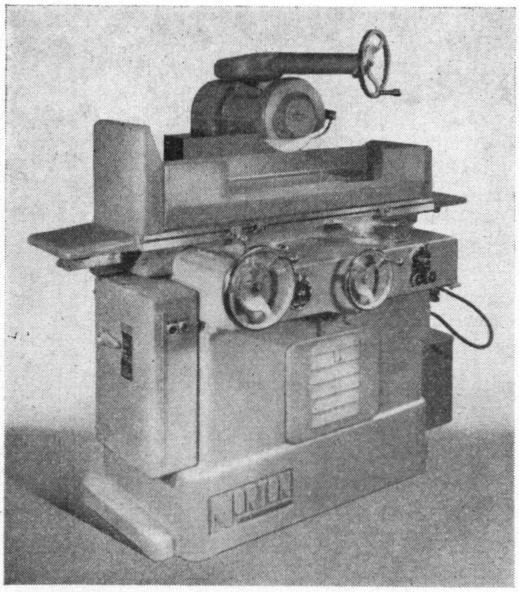
Model FS—For Filing, Sawing and Lapping

The big advantage of the Milwaukee Die Filer is the speed and ease with which the work piece can be taken off the table for inspection and checking against templates. The All-Purpose Overarm or File Roller Support can be instantly released from the file or saw and swung clear of the table, allowing quick removal of the work. Adjustable stop allows instant return to original setting.

Milwaukee Die Filers embody many other features which result in greater convenience, finer workmanship and lower costs. For example, the work table mounted on two brackets tilts 15 degrees in four directions for filing and sawing of compound angles. The lower chuck, mounted on the reciprocating ram has a bale-jointed jaw, which permits perfect alignment of files with warped or crooked shanks.

Detailed Information and Prices on Request.

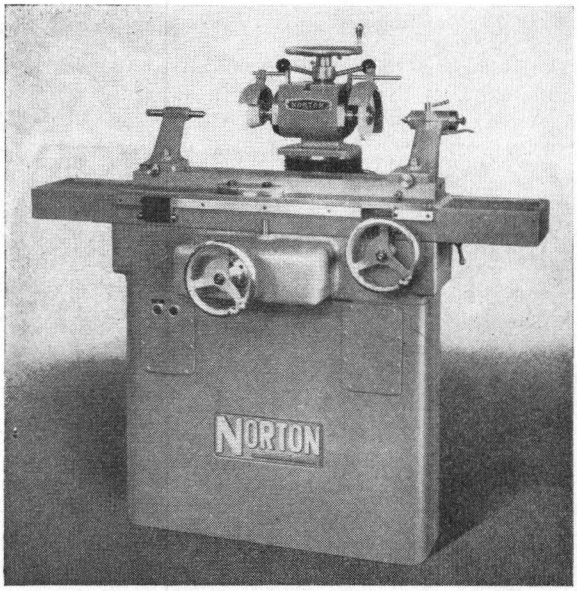
NORTON GRINDING MACHINES



A Complete Line for:

Cylindrical Grinding, Surface Grinding, Cylindrical and Flat Lapping, Universal Tool and Cutter Grinding, Multipurpose Grinding, Specialized Grinding, Crankpin and Crankshaft Bearing Grinding, Crankshaft Lapping, Cam and Shape Grinding, Camshaft Grinding, Car Wheel Grinding, Autopart Grinding.

Attachments and Equipment available for Special Work.



HYDRAULIC SURFACE GRINDERS

8 inch

The Norton 8x24 in. Hydraulic Surface Grinder, arranged for both hand and hydraulic table traverse and cross feed as standard, is designed to provide for a great range of work. Smooth operation of all moving parts, convenient placement of controls, and easy accessibility of maintenance points characterize this "light type" surface grinder. Magnetic chucks, individual dust control, and wet grinding attachment are available as optional (extra) equipment.

Specifications

Capacity, Longitudinal, in.	24
Transverse, in.	9
Vertical distance, table top to bottom of wheel, in.	12½
Vertical movement of wheel head, in.	14½
Wheel, type No. 1 straight, in.	10x1x3
Table speed (feet per minute) standard	70
Vertical feed	hand
Cross feed	automatic
Floor space, in.	61x93½
Net weight each, lbs.	3000

CUTTER AND TOOL GRINDERS

No. 20

A hand-operated, anti-friction bearing table machine that offers superior versatility by reason of its tilting wheel head feature. Wheel head tilts 15° either side of zero in a vertical plane, and it may be swivelled 360° in a horizontal plane. Other features are an integral motor cartridge type spindle, and duplicate controls which permit with equal convenience, operation from the front or either side of the machine. A wide variety of attachments are available, increasing the scope of the machine to handle many special jobs.

Specifications

Length capacity, with headstock, in.	24½
with left-hand footstock, in.	27
Capacity for work swung on centers, diam., in.	12
Wheel head swivels	360°
Wheel head tilts, either side of zero	15°
Longitudinal table movements, in.	20
Floor space, in.	72x79
Net weight each, lbs., plain	2400
universal	2600

Prices on Request.

WET CARBIDE TOOL GRINDERS

HAMMOND MODEL WIO

HAMMOND 10"
HAMMOND
MACHINERY
BUILDERS
INC.

10 Inch; with Double Cup Wheel Construction

The Hammond 10 in. Wet Carbide Tool Grinder is of modern design and heavy construction for fast, accurate, and large volume tool grinding. It is suitable for use with Silicon Carbide, Diamond, and Aluminum Oxide Wheels for grinding carbide or high-speed tools.

Heavy duty construction and precision oversize spindle with one double row and two single row bearings insure vibrationless operation.

Spindle speed of 1900 RPM is obtained through a multi-V-belt drive from the 1 HP motor in the base. (2 HP available). Wheel flanges are ground on spindle to insure true running wheels. 10x19 in. surface ground tables are quickly adjusted to any angle from 15° above to 30° below horizontal and locked into position by a single handle. A machined table slot running parallel to the wheel face carries a Compound Protractor Tool Gauge that may be adjusted to and from the wheel face to accommodate tool width.

Wheels are quickly changed by backing table away with feed screw and removing front section of wheel hood.

The patented No-Spray—No-Splash guards permit unrestricted vision, yet keep operator and floor dry. The "heart" of this is the swivel guard that closes up one side of the wheel when the other side is in use.

Coolant is applied through flexible metal hose equipped with spouts which can be moved from one side of the wheel to the other. The coolant pump is located at the rear of the machine and is controlled by an independent switch.

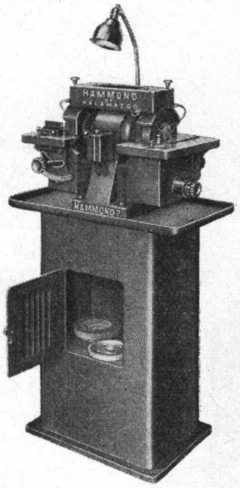
Wheel Dimensions

Thickness, in.	Width face, in.	Diam. center hole, in.	No. of mounting holes	Size of mounting holes	Diam. bolt circle, in.
10 in. diam. cup wheel					
1½ and 2	1½	2	6	13/32	3½
10 in. diam. straight wheel					
1½	1½	2	..	..	...

Complete Specifications and Prices on Request.

CARBIDE TOOL GRINDERS

HAMMOND MODEL 7



7 Inch

A heavy duty grinder that uses 7 in. diameter cup wheels, providing 20% more grinding area and 20% more abrasive material than 6 in. wheels. Wheel changes are thus reduced. Further, a 7 in. wheel not only handles small tools as well as a 6 in., but also handles larger tools better. Wheel flanges accommodate either 6 or 7 in. diam. wheels.

Heavy construction throughout for vibrationless operations. Spindle and bearings are oversize, and one of the bearings is double row for taking end thrust.

The tables are 8x14 in. and are quickly set to any angle from **25° above to 30° below** horizontal. Table assembly adjusted "in or out" by screw feed.

Other features include brake for quick stopping which is particularly handy with single phase current, and a conveniently located reversing switch.

Standard Equipment

Protractor tool gauge, wheel dresser holder without diamond, flexible lighting fixture and reversing switch. Motor is ½ HP, 3450 RPM, 220/440 dual voltage, 3 phase, 60 cycle AC, or 110 volt, 1 phase, 60 cycle, AC. Floor model includes cabinet base with sludge pan; space required 16x28 in. Grinding wheels not included.

Extra Equipment

Drip feed with two adjustable valves and tubes, for use with diamond wheels only. Compound protractor tool gauge.

Wheel Specifications

Thickness, in.	Width face, in.	Diam. center hole, in.	No. of mounting holes	Size of mounting holes, in.	Diam. bolt circle, in.
6 or 7 in. diam. diamond cup wheel					
Refer to Wheel Mfgr.		1¼	4	17/64 crk.	3½
6 or 7 in. silicon carbide cup wheel					
1¼ max.	*1 or 1½	1¼	4	13/32	3¼

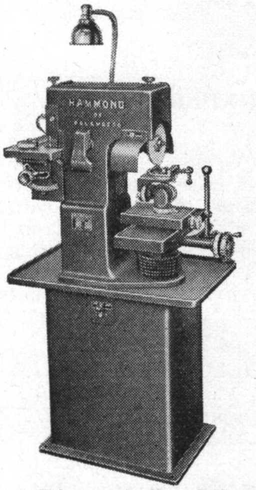
*6 in. wheel 1¼ in. max., 7 in. wheel 1½ in. max. face.

	Each
Bench Model—Net wt. 280 lbs.; ship. wt. 350 lbs.	$......
Floor Model—Net wt. 175 lbs.; ship. wt. 220 lbs.	......

Prices on Request

CHIP BREAKER AND DIAMOND FINISHING GRINDERS

HAMMOND MODEL CB-77



Provides rapid chip breaker grinding on one side and precise diamond wheel finishing on the other. Handles all types of box and single point tools and accommodates all of the required angles.

This dual purpose grinder is built to handle chip breaker grinding and diamond finishing on both a precision and production basis. Further, it is built to last; every wearing point is fully protected against the entrance of abrasive material.

Standard Equipment

Includes compound protractor tool gauge, flexible lighting fixture, reversing switch, and ½ HP motor of any electrical specifications. Without wheels.

Space required, 17x33 in.

Wheel Specifications

Diamond Chip Breaker Wheels: 4 to 6 in. diam., ⅛ to ½ in. face, 1¼ in. hole; resinoid bonded.

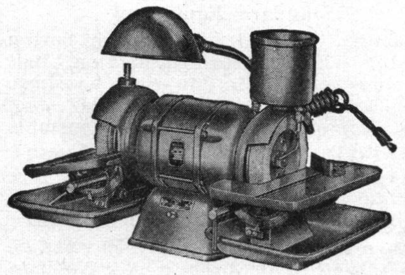
Diamond Cup Wheels: See Wheel Specifications for Model 7 above.

	Each
Model CB-77—Net wt. 480 lbs.; ship. wt. 575 lbs.	$......

Prices on Request

CARBIDE TOOL GRINDERS

BALDOR ELECTRIC



Sharpen Carbide Tools Quickly, Accurately, Inexpensively

Motor—½ HP heavy duty reversible; runs smoothly with practically no vibration. In single phase, the motor is capacitor type and will not burn out even though repeatedly overloaded. Also available in three phase, either 220 volt or 440 volt.

Base—Cast iron.

Tool Table—12x6 in., accurately machined. Slotted to accommodate tool rest support supplied as standard equipment. Adjustment up to 45° permits grinding of practically any tool.

Waterpan—12x8x1¼ in. deep on each side of machine, easily removed.

Waterpot—Large size; can be moved easily from one side of the grinder to the other. Rotates on stud so spout may be adjusted.

Tool Rest Support—Slides in slot of table. Accurately machined and includes a protractor to measure the horizontal angle of setting.

Wheels—Not included. Accommodates cup wheels 6 in. wheel x 1 in. face, recessed 4 in. diam. x 1 in. deep.

Standard equipment tool light, less bulb, which may be swung over either wheel; protractor at each end of grinder to indicate angle of tool table, reversing switch.

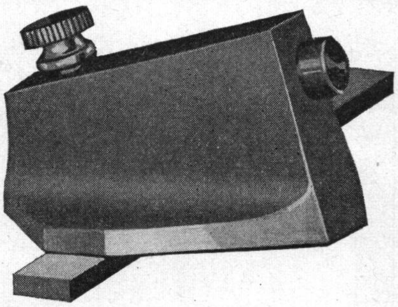
Speed 3400 RPM; shaft length 13 in. over all, 7¾ in. between bearing centers; shaft extends 1¾ in. from bearing housing; 10 7/16 in. high over all; net weight each 95 lbs.; shipping weight each 110 lbs.

Nos.	Each	Frame Nos.	Volts	Phase	Cycles
500	$118.00	153C	115	1	60
501	118.00	153C	230	1	60
502	118.00	153M	220	3	60
503	125.00	153M	440	3	60

One in a box.

	Each
No. **GA-1—Pedestal**; for above grinders	$28.00

BALDOR DIAMOND WHEEL DRESSERS



For Use with Baldor Carbide Tool Grinders

For truing silicon carbide wheels.

Mounted on a steel strip that slides in the slot of the tool table. Diamond is adjustable toward wheel with a fine screw adjuster.

Diamond is firmly clamped into the holder with a vertical screw clamp. Hole in dresser designed to accommodate shank 7/16 in. diameter by 1 in. long.

	Each
No. **GA-8**—Without diamond	$6.00

One in a box.

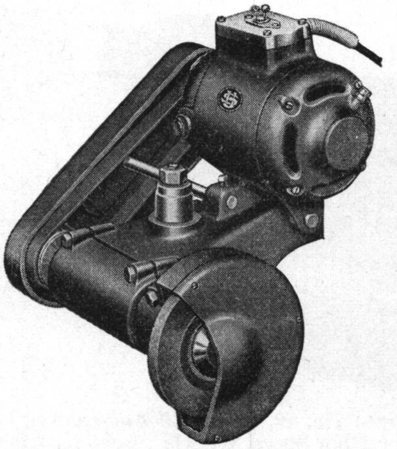
GRINDING WHEELS

We can furnish all types of wheels for any required grinding operation.

REFER TO INDEX

LATHE GRINDERS

U. S. PRECISION MODEL HLGE



Ball Bearing; Air Conditioned

The Model HLGE is a precision production tool for external and internal grinding. A speed range up to 30,000 RPM, obtained by various size pulleys, adapts this grinder for a wide variety of work.

External and internal quills are interchangeable. Internal quills can be furnished in six lengths.

Motor — Universal, operates on AC or DC, 60 cycles or less, 110 or 220 volts. Toggle switch mounted on motor housing. Air cleaner mounted in motor housing. Air cooled; oil cups on motor. Motor shaft and quill ball bearing mounted.

Standard Equipment

Model HLGE14—One No. X external quill; one each ⅛ and ¼ in. collet chucks to be mounted with adapter on arbor of quill; one No. SX spindle extension, to be mounted on arbor of external quill for internal grinding; four wheels, 4x½x½, 3x½x½, 1¼x¼x¼, ⅝x¼x¼ in.

Model HLGE12—One No. X external quill, one No. B2 internal quill; four wheels, 5x½x½, 4x½x½, 1¼x¼x¼, ⅝x¼x¼ in.

Model HLGE34—One No. X external quill, one No. B2 internal quill; four wheels, 6x½x½, 5x½x½, 1¼x¼x¼, ⅝x¼x¼ in.

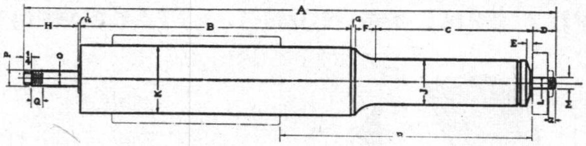
All Models—Carrying case, 2 high speed fabric belts, wheel guard, belt guard, diamond dresser, 15 ft. 3-wire flexible rubber covered cable with attachment plug, and four pulleys providing a range of 9 speeds. Special speeds can be furnished on order.

Note—Allowance will be made from price of grinder for any parts not required.

Model Nos.	Each	HP	Spindle speed, min.	Spindle RPM max.	Max. wheel, in.	Arbor, in. Int.	Arbor, in. Ext.	Net wt. each, lbs.
HLGE14	$206.00	¼	5200	30000	4	¼	½	40
HLGE12	283.00	½	4200	30000	5	¼	½	44
HLGE34	335.00	¾	3500	30000	6	¼	½	48

One in a crate.

INTERCHANGEABLE INTERNAL GRINDING QUILLS



Fits All HLGE Models

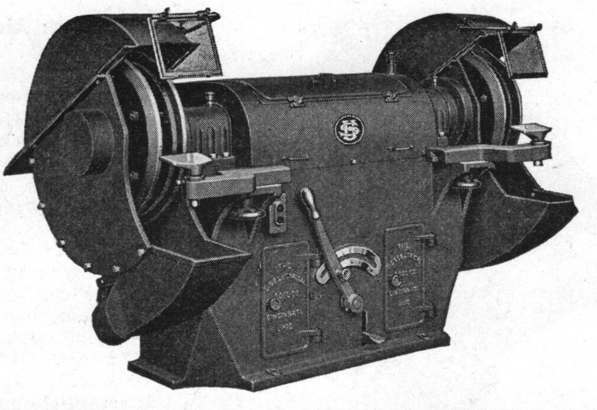
Not furnished as standard equipment.

Nos.	F6	H8	J10	L12	P16	R18
A, in.	18 13/32	20 13/32	22 13/32	24 13/32	28 13/32	30 13/32
B, in.	8⅞	8⅞	8⅞	8⅞	8⅞	8⅞
C, in.	6 3/16	8 3/16	10 3/16	12 3/16	16 3/16	18 3/16
D, in.	¾	¾	¾	¾	¾	¾
E, in.	3/16	3/16	3/16	3/16	3/16	3/16
F, in.	⅝	⅝	⅝	⅝	⅝	⅝
G, in.	⅛	⅛	⅛	⅛	⅛	⅛
H, in.	1 25/32	1 25/32	1 25/32	1 25/32	1 25/32	1 25/32
J, in.	1½	1½	1½	2	2	2
K, in.	2¼	2¼	2¼	2¼	2¼	2¼
L, in.	⅜	⅜	⅜	⅜	⅜	⅜
M, in.	All ⅜-24-RH					
N, in.	3/16	3/16	3/16	3/16	3/16	3/16
O, in.	½	½	½	½	½	½
P, in.	All ½-20-LH					
Q, in.	⅜	⅜	⅜	⅜	⅜	⅜
R, in.	9¼	11¼	13¼	15¼	19¼	21¼
Each	$96.50	99.00	103.00	125.00	148.00	160.00

One in a box.

HEAVY SNAGGING GRINDERS

U. S. MODEL 65



Adjustable Speed; Gear Drive; 7½, 10, 15 and 20 Horsepower For Vitrified or High Speed Wheels

Model 65 Adjustable Speed Alternating Current Grinder is equipped with a four-speed gear-drive transmission. With this drive an efficient peripheral speed can be maintained down to the flanges. Speed change is accomplished by means of hand lever mounted in front of machine, this lever is interlocked with guards which makes it impossible to run wheels at a dangerous rate of speed. Electric interlock prevents operation of machine unless gears are in mesh.

Motor—Built to NEMA standards, and is rated for continuous service with a temperature rise of 40°. Motor runs on heavy duty ball bearings, enclosed in dust-proof housings. One-piece chrome-manganese steel grinding wheel spindle supported by four heavy-duty ball bearings, enclosed in dust-proof housings. Bearings run in oil bath from large oil reservoir. Perfect lubrication assured by sight oil level gauge. Control is push button with overload protection and low voltage release.

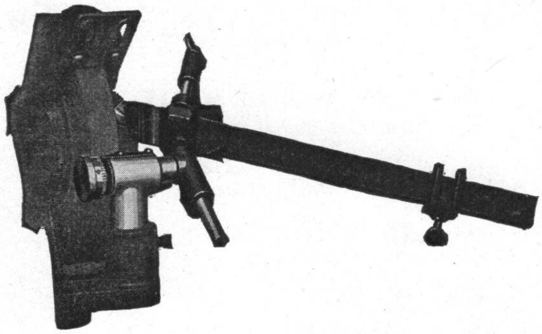
Wheel guards are steel boiler plate, adjustable to wheel wear, with permanent exhaust connections. Inner wheel flange keyed to spindle. Adjustable weights for balancing Hi-Speed wheels. Eye shields and shaft locking device standard equipment. Grinding wheels are not furnished as standard equipment but can be supplied at additional cost. Furnished for 220, 440 or 550 volt, 25 to 60 cycle, 2 or 3 phase, alternating current.

Complete Specifications and Prices on Request

Note—Information on other type of Heavy Grinders available on request.

TWIST DRILL GRINDING ATTACHMENTS

U. S.



For 8, 10 and 12 in. Grinders

Will grind drills ¼ to 1¼ in.

This attachment makes it possible to accurately and quickly grind straight and taper shank drill bits.

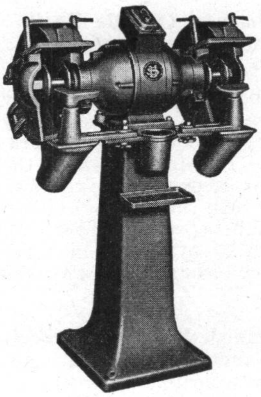
A micrometer screw feed is provided to advance the twist drill against the wheel.

	Each
Twist Drill Grinding Attachment—Wt. each 3 lbs.	$27.50

One in a box.

PEDESTAL GRINDERS

U. S. MODEL 500



No. 5UG

Standard Equipment

Totally enclosed motor, push button starter with overload protection. Ball bearings enclosed in dust-tight housings. Enclosed adjustable wheel guards; tool tray; lift out water pot, and adjustable work rests.

Eye shields and grinding wheels are not furnished as standard equipment, but can be supplied at additional cost.

Furnished for 220, 440 or 550 volts, 25 to 60 cycles, 2 or 3 phase. AC. Not furnished for single phase or direct current.

For other than 50 or 60 cycles an extra charge will be made. 2-phase machines have same dimensions as 3-phase.

Nos.	**1UG**	**2UG**	**3UG**	**4UG**	**5UG**
HP	1	2	3	5	5
Speed, RPM	1800	1800	1800	1800	1200
Wheel size, in.	12x1½	12x2	14x2½	14x2¾	18x3
Diam. spindle between flanges, in.	1	1¼	1¼	1¼	1½
Spindle length, in.					
Over all	23¼	28¼	30⅜	38½	40
Between wheels	17	20½	21	23	29
Base at bottom, in.	16x16	16x16	16x16	18½x20	18½x20
Floor to center of spindle, in.	38	38	38¾	38¾	38
Net wt. each, lbs.	275	340	365	780	790
Ship. wt. each, lbs.	350	420	450	910	920
Each	$158.00	226.00	265.00	330.00	398.00

One in a crate.

TWIST DRILL GRINDERS

COVEL YANKEE

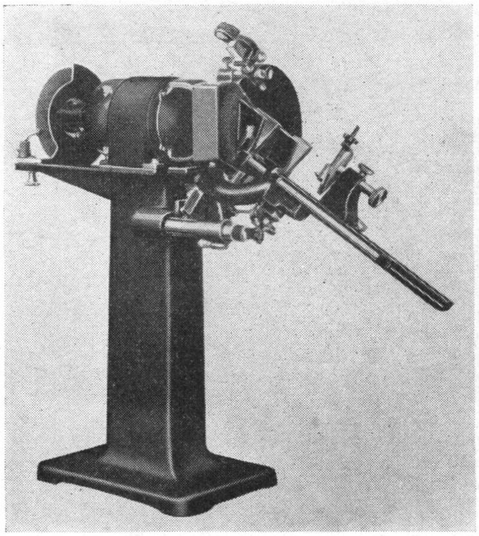


Fig. 18—Dry Grinder

With Point Thinning Wheel; Direct Motor Drive

With a Yankee it doesn't take a skilled operator to make set-ups smoothly, easily and quickly.

Change from one size or style of drill to another easily. Made almost without interruption.

Grinds quickly and accurately; uniform pressure control prevents burning.

Yankee-ground drills cut faster, drill faster and stay sharp longer.

Fig. 18—Dry Grinder

Style Motor Drive	**JBP-Pt.**	**FP-Pt.-A**	**FO-Pt.**
Drill size cap., in.	¼ to 1½	⅜ to 2½	½ to 4
Diam. wheels, in.	12	12	12
Ht. to cent. of spindle, in.	43	43	43
Speed of wheels, RPM.	1735	1735	1735
Horsepower	1½	1½	1½
Net wt. each, lbs.	550	620	650
Each	$740.00	760.00	825.00

Fig. 17—Wet Grinder

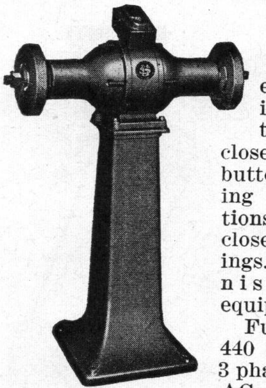
Style Motor Drive	**JB-Pt.-A**	**F-Pt.-A**	**F-Pt.**
Net wt. each, lbs.	750	820	850
Each	$825.00	845.00	875.00

One in a crate.

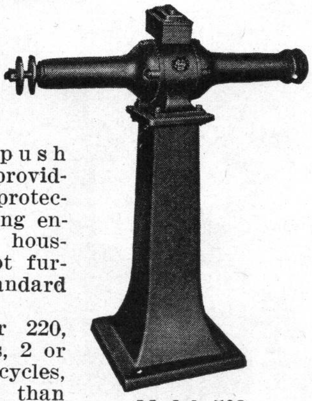
BENCH AND PEDESTAL BUFFERS

U. S. UTILITY

Ball Bearing



Model 501
Type No. 3UB



Model 503
Type No. 3UBW

Standard equipment includes totally enclosed motor, push button starter providing overload protections, ball bearing enclosed in dust housings. Wheels not furnished as standard equipment.

Furnished for 220, 440 or 550 volts, 2 or 3 phase, 25 to 60 cycles, AC. For other than 50 or 60 cycles, an extra charge will be made. Not furnished for single phase or direct current. 2-phase machines have same dimensions and prices as 3-phase. All models available with speeds of 1800 or 3600 RPM (specify.)

Model 501—Bench Type

Type Nos.	**1UB**	**2UB**	**3UB**	**5UB**
Horsepower	1	2	3	5
Diam. spindle, in.	1	1¼	1¼	1¼
Dist. between flanges, in.	1½	2	2½	3
Length spindle, in.				
Over all	31	37¼	38⅛	40⅛
Between wheels	25	29	29	30
Base at bottom, in.	14x14	14x14	14x14	14x14
Floor to cent. of spindle, in.	14⅛	14⅛	14⅛	17⅛
Net wt. each, lbs.	210	240	270	290
Ship. wt. each, lbs.	270	300	330	350
Each	$132.00	190.00	223.00	257.00

Model 501—Pedestal Type

Type Nos.	**1UB**	**2UB**	**3UB**	**5UB**
Horsepower	1	2	3	5
Diam. spindle, in.	1	1¼	1¼	1¼
Dist. between flanges, in.	1½	2	2½	3
Length spindle, in.				
Over all	31	37¼	38⅛	40⅛
Between wheels	25	29	29	30
Base at bottom. in.	16x16	16x16	16x16	18½x20
Floor to cent. of spindle, in.	37¾	38½	38½	38½
Net. wt. each, lbs.	220	250	280	300
Ship. wt. each, lbs.	320	350	380	400
Each	$138.00	196.00	229.00	263.00

Model 503—Bench Type

Type Nos.	**1UBW**	**2UBW**	**3UBW**	**5UBW**
Horsepower	1	2	3	5
Diam. spindle, in.	1	1¼	1¼	1¼
Dist. between flanges, in.	1½	2	2½	3
Length spindle, in.				
Over all	43	54 5/16	55⅝	57⅛
Between wheels	36¾	46 5/16	46⅝	47⅛
Base at bottom, in.	14x14	14x14	14x14	14x14
Floor to cent. of spindle, in.	14⅛	14⅛	14⅛	17¼
Net wt. each, lbs.	240	270	300	320
Ship. wt. each, lbs.	300	330	380	400
Each	$156.00	234.00	292.00	354.00

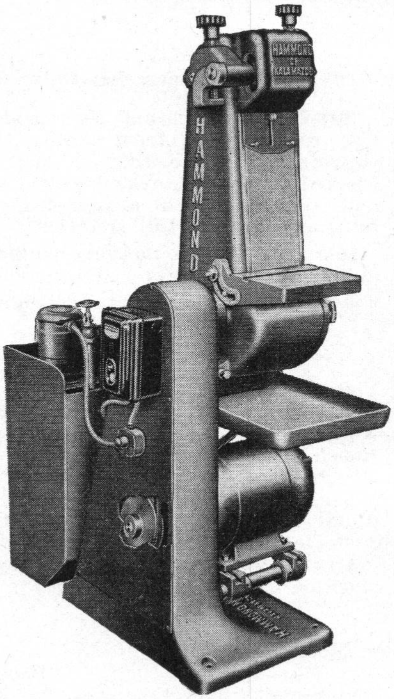
Model 503—Pedestal Type

Type Nos.	**1UBW**	**2UBW**	**3UBW**	**5UBW**
Horsepower	1	2	3	5
Diam. spindle, in.	1	1¼	1¼	1¼
Dist. between flanges, in.	1½	2	2½	3
Length spindle, in.				
Over all	43	54 5/16	55⅝	57⅛
Between wheels	36¾	46 5/16	46⅝	47⅛
Base at bottom, in.	16x16	16x16	16x16	18½x20
Floor to cent. of spindle, in.	37¾	38½	38½	38½
Net. wt. each, lbs.	250	280	310	330
Ship. wt. each, lbs.	350	380	410	430
Each	$162.00	240.00	298.00	360.00

One in a crate.

ABRASIVE BELT GRINDERS

HAMMOND MODEL VH-6WP WET-N-DRI



Show in Vertical Position

Vertical or Horizontal

The Model VH-6WP Wet-N-Dri Abrasive Belt Grinder can be used either wet or dry and is equipped with a coolant unit consisting of tank, pump and independent motor, spray nozzle, sludge pan, valve and piping.

It can be changed from vertical to horizontal operation by loosening one cap screw conveniently located on top at rear of base. Heavy sheet steel sludge pan catches all coolant for either vertical or horizontal operation and drains directly into top of coolant tank.

This is the ideal machine for flat surface grinding and polishing of castings, die casting forgings, plastics, glass, wood, ceramics, etc., and for grinding, polishing and deburring sheet metal parts. Wet belt grinding, polishing and deburring is not only faster, and produces a better finish than dry, but also eliminates dust, prevents distortion of parts from heat, and keeps abrasive belt clean and free cutting.

Specifications

Abrasive belt size, in.	6x60
Belt platen, in.	6½x14
Work table, in.	6¾x10
Table tilts	15° up, 30° down
Std. abrasive belt speed, SFM	3400

Motor—1800 RPM, 1½ or 2 HP, totally enclosed, fan cooled.

Motor control—Manual, with overload protection, or magnetic with overload and low voltage protection.

Belt working surface, in.	6x12½
Approx. floor space, in.	24x40
Net. wt. each, lbs.	570
Shipping wt. each, lbs.	700

Standard Equipment

Furnished complete except motor and control are extra.

	Each
Model VH-6WP—Less motor and control	$525.00

HAMMOND MODEL VH-6WM WET-N-DRI

Same as Model VH-6WP except it does not have coolant tank and pump. It is arranged for connecting to the city water main with drain to sewer.

	Each
Model VH-6WM—Less motor and control	$460.00

One in a crate.

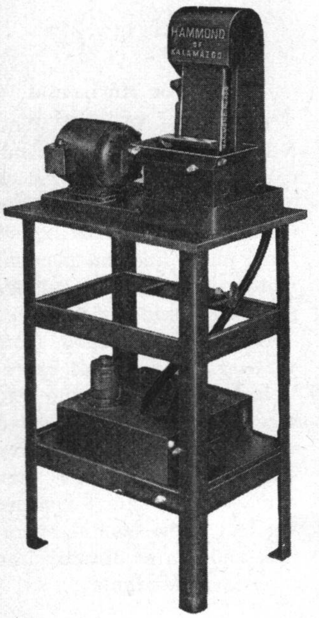
ABRASIVE BELTS

We carry a full line of belts in all grits or grades.

REFER TO INDEX

ABRASIVE BELT GRINDERS

HAMMOND MODEL 400 WET-N-DRI



For Vertical Operation Only

Supplied in bench and floor models; direct drive from motor is standard. Abrasive belt is easily tracked by a simple tracking device and spring tension automatically takes up abrasive belt stretch.

Heavy cast frame. Base and platen and balanced pulleys run on high quality sealed-for-life ball bearings.

Specifications

Platen work. surface, in.	4x6
Abrasive belt, in.	4x35 or 36
Abrasive belt speed, SFM	1800
Bench to work rest, in. .	7½
Bench space, in.	10½x20
Floor to work rest, in. ..	40

Motor—⅓ HP, 1750 RPM, 110 volt, single phase, 50 or 60 cycles, AC.

Can be used as dry machines by shutting off water supply.

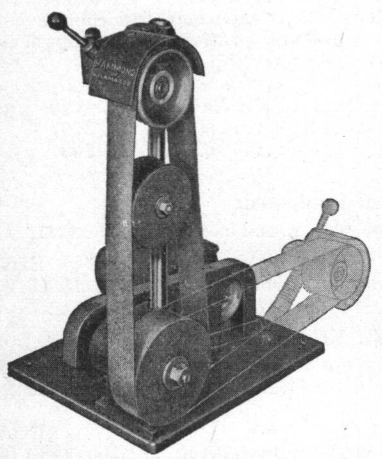
Less Motor

	Each
Model 400-BWM—Bench, for water main connection; net wt. each 90 lbs.; ship. wt. each 120 lbs.	$ 75.50
Model 400-FWM—Floor, for water main connection; net wt. each 125 lbs.; ship. wt. each 155 lbs.	96.50
Model 400-FWP—Floor, with self contained pump and tank unit consisting of a 2½ gal. tank with motor driven pump; net wt. each 145 lbs.; ship. wt. each 195 lbs. ..	165.00

One in a crate.

ABRASIVE BELT GRINDER-POLISHERS

HAMMOND MODEL VH-2D



Vertical or Horizontal

For fast deburring, grinding, polishing, shaping, chamfering, squaring, grinding radii, contouring, removing fins, etc., as plastics; ceramics, wood, rubber, glass, bone, ferrous and non-ferrous metals, etc.

Standard Equipment and Specifications

Adjustable belt platen; sealed-for-life ball bearings; positive belt tracking; spring belt tension; 7x8 in. adjustable work table; motor sheave; V-belt and V-belt guard; 6 in. diam. by 2 in. face muslin contact wheel.

Abrasive belt speed with ⅓ HP motor 3000 SFPM, with ½ HP motor 3800 SFPM. ⅓ or ½ HP 1750 RPM motor recommended. Will accommodate belts 42 to 60 in. long by ⅓ to 2½ in. wide.

Space required 15x17 in.

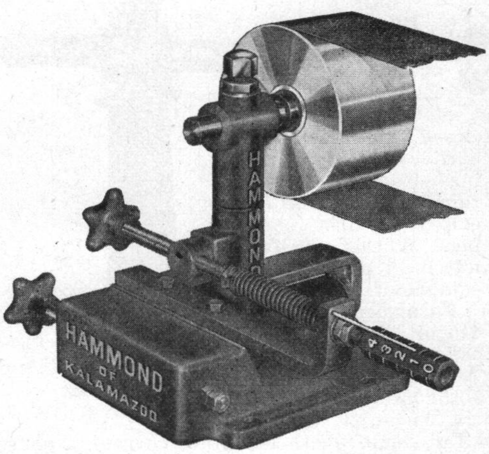
Less Motor

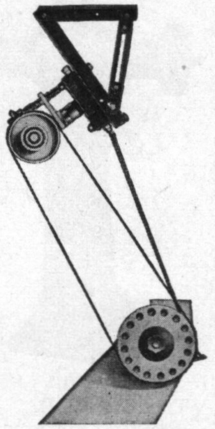
	Each
Model VH-2D—Bench; net wt. each 75 lbs.	$ 93.50
Model VH-2D—Floor; net wt. each 120 lbs.	113.50

One in a crate.

BENCH BACKSTANDS

HAMMOND MODEL 6R





Ceiling Mounted Above Lathe

Especially desirable for those inconvenient and limited space wall or ceiling mounted installations.

Specifications

8 in. diam. by 4½ in. face dynamically balanced stainless steel pulley mounted on sealed, life-time-lubricated ball bearings. Takes abrasive belts up to 4 in. wide.

Heavy cast iron base, drilled for mounting.

Convenient tension release lever for quick, easy changing of belts.

Spring-loaded belt tension adjustment operated by convenient sure-grip hand screw.

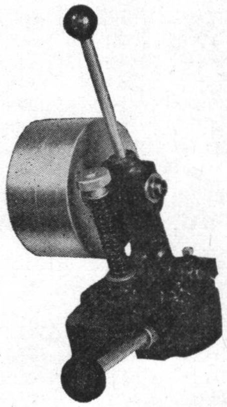
Positive hand screw-operated belt tracking adjustment.

	Each
Model-6R—Net wt. each 80 lbs.	$105.00
No. ABD-1482—Bracket, for wall or ceiling mounting; wt. each 10 lbs.	18.50

One in a crate.

IDLER BACKSTANDS

DELTA BENCH TYPE



Facilitate the conversion of bench type grinders to more economical grinding and polishing, using abrasive cloth belts.

This bench unit in combination with No. 20 bracket converts your polishing lathe to a backstand finisher using special soft contact wheels and flexible abrasive belts, 2 to 3 in. wide, 132 in. long.

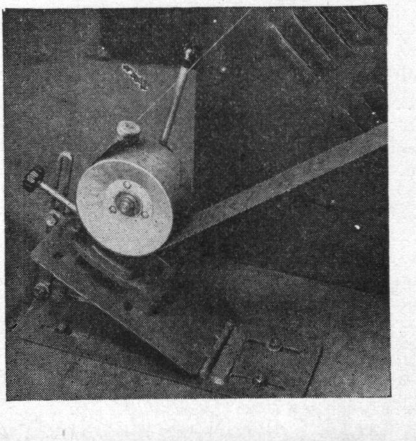
Stamped steel pulley 5$\frac{3}{16}$ in. diam. by 2¾ in. face.

	Each
No. 31-430—Right hand	$19.95
No. 31-431—Left hand	19.95

Weight each 20 pounds.

One in a carton.

IDLER BACKSTAND BRACKETS



For Use With Delta Idlers

When used in conjunction with floor type polishing lathes or jacks. Such installations are limited to the use of contact wheels that are not over 12 in. diam. or 3 in. face widths.

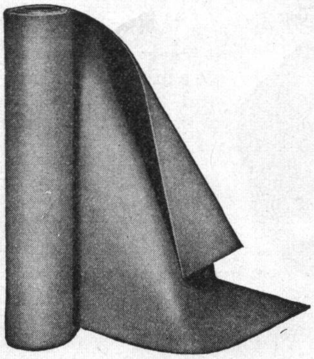
	Each
No. 20—Floor type	$7.50
No. 20—Wall type	7.50

Weight each 10 pounds.

One in a carton.

PACKING

RED RUBBER SHEET



Recommended for air, cold or hot water, steam joints, and all medium and low pressure saturated steam conditions up to 150 lbs. per square inch.

Made of tough red compound that will conform to rough surfaces and not blow out. Long-aging.

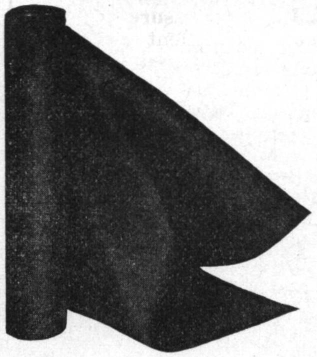
No. 625—36 in. Wide

Thickness, in.	Per pound	Wt. per sq. yard, lbs.
1/16	$0.63	6
3/32	.63	9
1/8	.63	12
3/16	.63	18
1/4	.63	24

100 pounds in a roll.

PACKING

BLACK OIL PROOF SHEET



For use where high heat is involved. Will also withstand steam pressure up to 125 lbs. and is perfectly effective against ammonia, acids, hot liquids and alkalies.

Has an exceptionally high degree of oil resistance. It is scientifically compounded to withstand high heat, ammonia, acids and alkalies without cracking, burning or disintegrating.

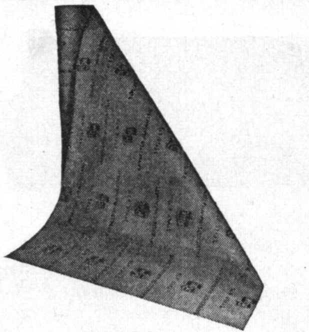
No. 630—36 in. Wide

Thickness, in.	Per pound	Wt. per sq. yard, lbs.
1/16	$1.24	4¾
3/32	1.24	7¼
1/8	1.24	9½
3/16	1.24	14½
1/4	1.24	19

100 pounds in a roll.

PACKING

COMPRESSED ASBESTOS SHEET



Graphited

As this sheet has a very low rubber content, it finds wide acceptance in all types of industry where low first cost is an important consideration. It has been approved by the National Board of Fire Underwriters for use in connection with hazardous liquids such as gasoline, benzol, kerosene, etc.

It is made from select asbestos fibres and a heat resisting binder firmly compressed, resulting in a pliable product having good tensile strength.

No. 675—60x60 in. Sheets

Thickness, in.	Per pound	Wt. per sq. yard, lbs.
1/32	$0.90	7½
1/16	.83	15
1/8	.83	30

Open stock.

Note—Sold only in full sheets.

"PYROID" COMPRESSED ASBESTOS SHEET

Has a wide field of service in the oil refinery industry where conditions are extremely severe due to the solvent action of petroleum derivatives at high temperatures. Another important field is the public utility industry, where temperatures and pressures are excessively high. Can be used for practically any condition and makes an economical sheet packing for even cold water service.

Made in homogeneous construction of selected long fibre asbestos, thoroughly mixed with a heat resistant binder; highly compressed. A dense but pliable sheet of exceptional tensile strength.

No. 650—60x60 in. Sheets

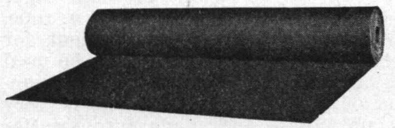
Thickness, in.	Per pound	Wt sheet, lbs.	Thickness, in.	Per pound	Wt sheet, lbs.
1/32	$1.13	7½	3/32	$1.05	22½
1/16	1.05	15	1/8	1.05	30

Open stock.

Note—Sold only in full sheets.

WIRE INSERTED ASBESTOS SHEET

Red and Black



For high pressure steam, air or water, as well as exhaust manifolds of all types of gasoline motors. Especially recommended where there is excessive expansion and contraction or where narrow flanges are necessary or bolt holes are close together.

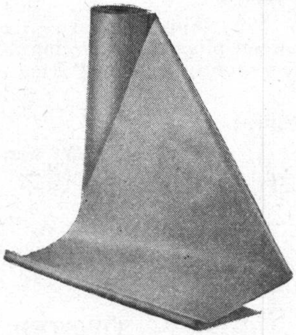
Constructed of tightly woven wire inserted asbestos cloth to which has been applied a heat resistant compound. One side red, other side graphited.

40 in. Wide

	Per pound
No. 600—1/16 in. thick; wt. per lineal yd. 5½ lbs.	**$1.62**

Approximately 200 pounds in a roll.

DUROIL FIBRE SHEET



Particularly suitable for connections where temperatures do not exceed 250° F against oil, water, grease, air, gasoline, etc.

This sheet is made from strong vegetable fibres, thoroughly impregnated with oil resistant chemical binder. The sheet is heavily compressed during process of manufacture.

No. 648—36 in. Wide

Thickness, in.	Per pound	Wt. per sq. yard, lbs.	Thickness, in.	Per pound	Wt. per sq. yard, lbs.
.015	$1.06	15/16	.045	$3.33	2 9/16
.021	1.65	1 3/16	.062	4.28	3¼
.032	2.12	2	.125	8.85	6½

25, 50 and 100 yard rolls.

CLOTH INSERTED SHEET

For cold water, low pressures and general service. Suitable for gaskets in pipe lines.

Made of rubber with one ply of cloth for each 1/16 in. thickness.

No. 635—36 in. Wide

Thickness, in.	Per pound	Wt. per sq. yard, lbs.	Thickness, in.	Per pound	Wt. per sq. yard, lbs.
1/16	$1.45	5¼	1/8	$1.45	10½
3/32	1.45	8	3/16	1.45	16

100 pounds in a roll.

DIAPHRAGM SHEET

Recommended for water, air and gas damper regulators.

Made from high tensile strength square-woven duck having covers of best grade Flexlastic which are compounded to resist air, water, steam and oil.

No. 645—36 in. Wide

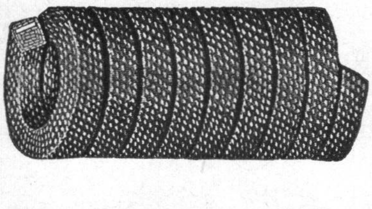
Thickness, in.	Per pound	Wt. per sq. yard, lbs.	Thickness, in.	Per pound	Wt. per sq. yard, lbs.
1/16	$1.75	4½	1/8	$1.75	9
3/32	1.75	6¾	3/16	1.75	13½

100 pounds in a roll.

Note—We will cut all roll packings to any length across full width of sheet.

PACKING

RUBBER-BACK SPIRAL ROD



High Pressure

A most excellent packing for steam hammers and for expansion joints. Common usages are piston rods and valve stems on steam engines, air compressors and steam pumps, against high temperatures not exceeding 600 degrees F.

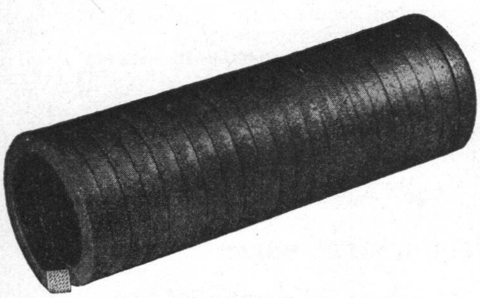
Constructed by wrapping a cover of asbestos cloth over a core of asbestos cloth and a resilient rubber cushion. The asbestos cloth is treated with a heat-resisting rubber friction and the finished packing lubricated and graphited.

No. 121-S—Spiral

Size, in.	Per pound	Feet per spiral	Wt. box, lbs.	Size, in.	Per pound	Feet per spiral	Wt. box, lbs.
¼	$2.95	25	1	½	$2.50	12½	2½
5/16	2.80	12½	1	9/16	2.50	12½	2¾
⅜	2.50	12½	1	⅝	2.50	12½	3
7/16	2.50	12½	1½	¾	2.50	12½	5

One spiral in a box.

CROSS EXPANSION SPIRAL ROD



Designed for rods and plungers against cold water, ammonia, or medium pressure steam. Ideal when rods and plungers are out of line or subject to lateral motion.

Constructed of heavy special duck laid up diagonally and cemented with tough flexlastic between plies to insure maximum flexibility. Expansion is increased approximately 3 times over plies laid horizontally.

No. 405—20 ft. Spiral

Size, in.	Per pound	Wt. box, lbs.	Size, in.	Per pound	Wt. box, lbs.
¼	$2.35	⅞	½	$2.35	2¾
5/16	2.35	1	9/16	2.35	4
⅜	2.35	1¾	⅝	2.35	4¼
7/16	2.35	2	¾	2.35	6¾

One spiral in a box.

PACKING

SQUARE BRAIDED ASBESTOS

Very efficient on valve stems, expansion joints and all services requiring a soft asbestos packing.

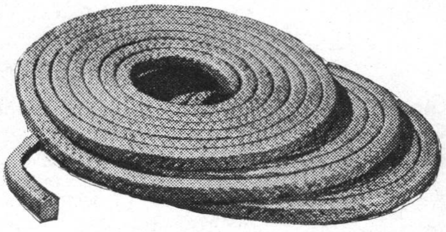
Manufactured in braid over braid construction from long fibre asbestos yarn, thoroughly lubricated with finest oils and graphite.

No. 360—On 25 Pound Reels

Size, in.	Per pound	Wt. per 100 ft., lbs.	Size, in.	Per pound	Wt. per 100 ft., lbs.
¼	$2.00	6¼	½	$1.35	15½
5/16	1.85	7½	9/16	1.35	22
⅜	1.35	9¾	⅝	1.35	24
7/16	1.35	12½	¾	1.35	35

Open stock.

SQUARE BRAIDED JUTE



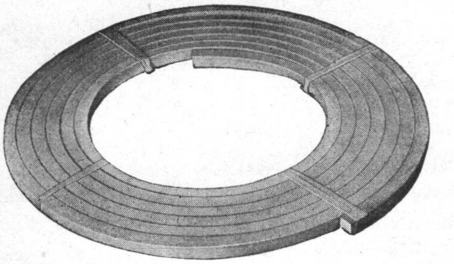
Used against cold water, salt water, brine and cold oils, on both reciprocating and rotating rods of pumps.

Made of tough, long fibre India jute. Carefully braided in plaited construction. Lubricated with double rendered tallow guaranteed against rancidity.

No. 532—In Coils

Size, in.	Per pound	Ft. per coil	Coils per box	Wt. box, lbs.	Size, in.	Per pound	Ft. per coil	Coils per box	Wt. box, lbs.
¼	$1.75	39	7	11	9/16	$1.35	17	4	12
5/16	1.55	35	7	11	⅝	1.35	16	3	9
⅜	1.35	29	6	11	¾	1.35	13	3	11
7/16	1.35	26	5	12	⅞	1.35	12	3	13
½	1.35	22	4	12	1	1.35	10	2	10

WHITE DUCK HYDRAULIC



Designed for packing inside packed pumps against cold or hot water. Also frequently used for top and bottom rings in hydraulic sets.

Made of finely woven cotton fabric frictioned with a tough white compound. Constructed in a manner which reduces swelling to a minimum and insures long and satisfactory service.

No. 410—In 20 Ft. Coils

Size, in.	Per pound	Coils per box	Wt. per box, lbs.
⅜	$2.55	6	10½
½	2.55	4	16¾
⅝	2.55	3	26
¾	2.55	3	36

TWISTED VALVE STEM

Round

For packing valve stems and small spaces against air, hot and cold water and ammonia.

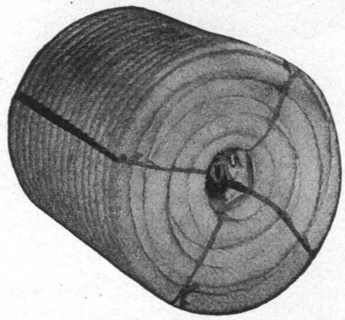
Strands of long fibre asbestos yarn are twisted together to the required size. Thoroughly treated with finest oil and graphite. Can be separated easily making it adaptable to various sizes of small stuffing boxes.

No. 200—On 1 lb. Spools

Size, in.	Per pound	Approx. ft. per pound
⅛	$2.20	99
3/16	1.95	40
¼	1.95	29
5/16	1.95	19
⅜	1.95	12

One spool in a box.

ASBESTOS ROPE



Made of firmly spun asbestos fibre tightly twisted and formed into a rope.

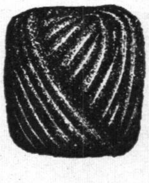
Being very flexible it is excellent for gasketing and insulating and may be used against dry steam, air, acids and all conditions of high temperatures. It is very easily untwisted and made into smaller sizes if so desired.

No. 250—25 Pound Reels

Diam., in.	Per pound	Ft. per lb.	Diam., in.	Per pound	Ft. per lb.
⅜	$1.00	24	¾	$0.85	6
7/16	1.00	18	⅞	.85	4½
½	.85	13	1	.85	3½
⅝	.85	10			

PACKING

ASBESTOS WICK



Composed of strands of heavy roving twisted together. Strands may be easily twisted together to form larger sizes or untwisted to form smaller sizes.

Used principally for packing hot water lines. When dipped in hot tallow or paraffin it also makes an economical packing for cold water lines.

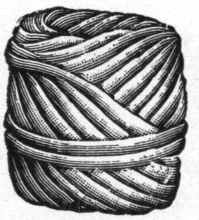
¼ in. Diameter

	Per pound
No. 225—½ lb. balls; approximately 60 ft. to the pound	**$0.82**

Fifty balls (25 pounds) in a case.

COTTON CANDLE WICKING

Fine Thread



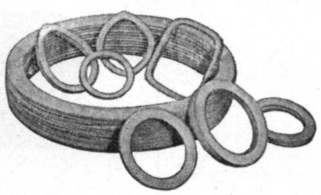
Made from good grade selected cotton.

For lubricating journals, valve stems, miners' lamps, etc.

	Per pound
No. 11 — 2 oz. balls	**$1.50**

Five pounds in a bag.

ASBESTOS METALLIC GASKETS



For Manholes, Handholes and Flange Joints

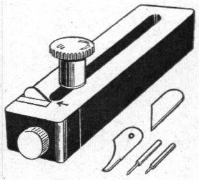
Constructed of an unusually tightly woven brass wire inserted asbestos cloth which has been treated with a coat of special high heat resisting compound.

No. 700

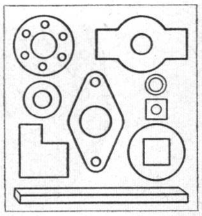
Size, in.	Each	No. in a box	Wt. per box, lbs.
3x 4 x ¾x¼	$0.40	24	3½
3x 4½x ¾x¼	.44	24	4
4x 5 x ¾x¼	.49	24	4½
4x 6 x ¾x¼	.53	24	5
10x14 x1 x¼	1.29	12	7½
10x15 x1 x¼	1.32	12	8
11x15 x1 x¼	1.38	12	8⅛
11x16 x1 x¼	1.44	12	8½
12x16 x1 x¼	1.49	12	8¾
12x16 x1¼x¼	1.42	12	11¼

GASKET CUTTERS

SPEARHEAD



The Cutter



Some odd shapes it will cut

Cuts Any Shape Precision Size Gaskets

Manually operated. Combines features of the circle cutter, straight edge, compass, scorer and knife. It will cut round gaskets, washers and discs from ¼ to 6 in., any size odd shapes, and straight strips and shims. Anyone can learn to use it.

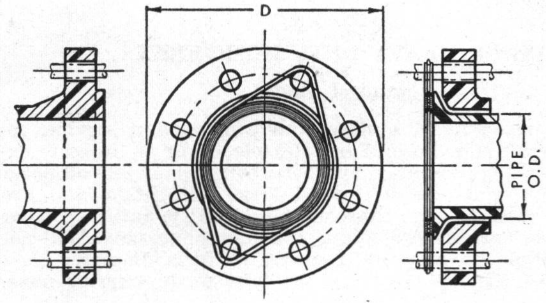
Will cut all pliable sheet materials such as asbestos, canvas, cork, felt, fibre, lead, leather, paper, rubber; thin wood, wallboard, etc.

	Each
No. 750-A-1—Complete with 4 blades; wt. each 1 lb.	$7.50

One in a box.

FLEXITALLIC GASKETS

STYLE D



For Raised Face, Smooth Face, Van Stone or Cranelap Joints

Designed for use where pressures, temperatures or chemical solutions will not permit the use of rubber or pressed asbestos gaskets. Style D gaskets are equipped with centering guide constructed integral with the gasket. This is designed for specific bolting which reduces possibility of misapplication.

Flexitallic gasket construction changes with each pressure group. Gaskets can also be furnished in various ferrous and non-ferrous alloys for chemical processes where such materials are indicated. Stainless steel, monel, copper, bronze, phosphor bronze and aluminum are readily available.

Flexitallic gaskets are available in nominal pipe sizes through 24 in.

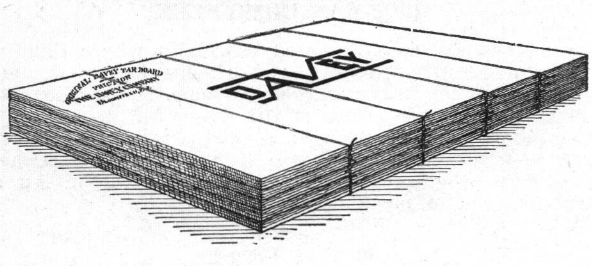
For male and female tongue and groove joints use Style "R" gaskets without centering rings. For pressures over 600 lbs. and over 12 in. NPS, Flexitallic type "C-G" gaskets are recommended.

Low Carbon Plated Steel

Nominal pipe size, in.	Gasket, in.		150 lb. Series		300 lb. Series		400 lbs. Series		600 lb. Series	
	ID	OD	Each	Wt. each, lbs.	Each	Wt. each, lbs.	Each	Wt. each, lbs.	Each	Wt. each, lbs.
3	3¾	4 11/16	$0.45	.128	$0.50	.168	$0.50	.168	$0.50	.168
4	4¾	5 13/16	.60	.176	.70	.216	.70	.216	.70	.216
6	6⅞	8 3/16	1.00	.320	1.15	.364	1.15	.392	1.20	.432
8	8⅞	10 5/16	1.40	.408	1.50	.464	1.50	.514	1.70	.564
10	10 13/16	12 7/16	1.70	.540	1.90	.660	1.90	.720	....	....
12	12⅞	14 11/16	2.10	.740	2.50	.900	2.50	.980	....	....

Open stock.

FRICTION BOARD



Friction board lends itself to such uses as power clutches, braking devices and friction drives.

Nos.	4	5	7	14
Thickness, in.	¼	3/16	⅛	1/16
Size boards, in.	34x44	34x44	34x44	34x44
No. of boards to bundle	4	5	7	14
Approx. wt. per bundle, lbs.	50–60	50–60	50	50

Intermediate numbers between 4 and 14 supplied on order.

Prices on Request

COTTON WASTE

ONE BALE
COTTON WASTE

Made of selected material carefully blended and machined to make an absorbent waste.

For wiping and polishing machinery, engines, automobiles, etc.

White

Size bales, lbs.	50	100
Per pound	$0.30	.30

Colored

Size bales, lbs.	50	100
Per pound	$0.24	.24

WIPING RAGS

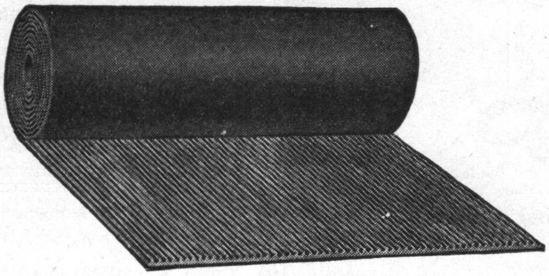
Sanitary

Thoroughly washed and sterilized, making a wiping medium that is perfectly safe and clean. Sleeves and closed pieces opened; pins, buttons, snaps, etc. removed.

Size bales, lbs.		**100**
No. 1 White	Per pound	**$0.44**
No. 1 Colored	Per pound	**.36**

SWITCHBOARD MATTING

MANHATTAN



Corrugated Top Surface

Made especially for switchboards. Has very low conductivity; no large foreign particles or air pockets.

Both grades have a sharp, gripping, corrugated top surface, unperforated, and a rough bottom surface to prevent creeping. Fabric reinforcement is used in the center to allow the matting to lie flat and to prevent buckling.

We do not recommend switchboard matting wider than 48 in. due to the possibility of weaknesses caused by splicing.

Furnished in long lengths or cut pieces in all standard thicknesses and regular widths. Due to weight and difficulty of handling, it is suggested that the maximum length per piece be held to 20 ft.

GRADE A—ASTM SPECIFICATIONS

For Up to 36,000 Volts in ¼ in. Thickness

Highest grade. Made in accordance with specifications of the American Society of Testing Materials. Only the purest materials used.

Thickness, in.	¼	5/16	⅜	½
Wt. per sq. yd., lbs.	15	19	23	31
Per square yard	$10.05	11.85	14.65	18.00

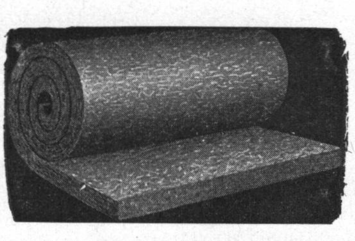
GRADE B—STANDARD COMMERCIAL TYPE

For Up to 15,000 Volts in ¼ in. Thickness

Manufactured from pure, tested materials with skilled workmanship. Not made to ASTM specifications.

Thickness, in.	¼	5/16	⅜	½
Wt. per sq. yd., lbs.	16½	21	25½	34½
Per square yard	$7.95	9.00	11.00	14.65

COCOA MATTING



Used in Placer Mill Operations

Supplied in one and three foot widths.

Can also be supplied in special shapes, on special order, for tank bottoms.

Prices on Request

GOLD SAVING CLOTH

ENGLISH CORDUROY

A strong ribbed fabric material used extensively for gold recovery.

Per lineal yard
28 in. Wide—In any length up to full 75 yard bolts ....$....

Price on Request

AIR HOSE

CONDOR HOMO-FLEX

THE MANHATTAN RUBBER MFG. DIV.
OF RAYBESTOS-MANHATTAN, INC.
Condor Homo-Flex
AIR HOSE
MADE IN
PASSAIC, N.J.
U.S.A.

Mandrel Made

Highest quality air hose, precision made, for service on air drills, pneumatic tools, etc. Tube made of high quality rubber, **oil resistant.** Super-strength cord carcass gives very high working pressures. Black rubber cover resists abrasion, cutting, tearing. Made on polished steel mandrel giving inside tube that is smooth, and uniform in inside diameter throughout entire length, assuring trouble free coupling service. Same hose available with **oil-proof** synthetic tube where oil is present in air lines; will not swell and deteriorate under oily conditions.

50 Foot Lengths

Size, in.	Per 100 feet	OD, in.	Approx. work. pressure, lbs.	Wt. per 100 ft., lbs.
⅜	$55.04	⅞	300	29
½	63.57	1	300	30½
⅝	71.37	1⅛	275	37
¾	83.21	1¼	250	43
1	96.22	1⅝	225	57

250 ft. of a size in a standard package.

Please state in orders whether you wish oil resistant or oil proof tube. Oil proof is about 20% higher.

CONDOR HEAVY DUTY HOMO-FLEX

Mandrel Made

For extra rugged mine, quarry, and construction service, requiring a Super Tough hose. Very flexible, light in weight, extremely high working pressures. Synthetic tube completely **oil-proof**—will not swell or deteriorate when large amounts of oil are present. Heavy cord carcass; thick, highest quality, natural rubber cover that resists hardest of snagging, cutting, or tearing. Will not kink or curl. Made on mandrel assuring uniform diameter—less coupling troubles. This is the finest air hose made, barring none.

50 Foot Lengths

Size, in.	Per 100 feet	OD, in.	Approx. work. pressure, lbs.	Wt. per 100 ft., lbs.
¾	$108.94	1½	350	64½
1	128.62	1¾	300	80
1¼	143.76	2	250	91
1½	166.45	2¼	200	107

¾ and 1 in., 250 ft., 1¼ and 1½ in., 100 feet in a std. pkg.

RAY-MAN HOMO-FLEX

Rayon cord air hose designed especially where light weight hose is wanted for bench work with air operated tools, and ordinary air hose is too heavy and cumbersome. Homo-Flex construction retained in manufacture of this hose. An ideal hose for industries using small air tools in precision work; for blowing or cleaning in small areas where ease of handling and extreme flexibility is most essential. Resists kinking; very light. All rubber construction. Not oil-proof.

50 Foot Lengths

Size, in.	Per 100 feet	OD, in.	Approx. work. pressure, lbs.	Wt. per 100 ft., lbs.
3/16	$25.02	½	240	12½
¼	26.58	9/16	225	14½
5/16	28.15	39/64	215	16
⅜	31.27	11/16	200	18
½	40.63	⅞	175	21½

250 ft. of a size in a standard package.

AIR HOSE

PARANITE MOLDED-BRAIDED

THE MANHATTAN RUBBER MFG. DIV.
OF RAYBESTOS—MANHATTAN, INC.
PARANITE
REG. U.S. PAT. OFF.
AIR HOSE
MADE IN PASSAIC, N.J. U.S.A.

Available in long, continuous lengths. Well constructed for general air hose service. Light weight, flexible, easy to handle. Tube of tough oil * resisting rubber, rayon braid carcass adding lightness, yet obtaining high working pressures normally found in heavier three braid hose. Smooth red cover of high quality rubber, highly resistant to snagging, tearing, cutting.

*Not oil-proof.

Continuous Lengths up to 100 Feet

Size, in.	Per 100 feet	Braid	OD, in.	Approx. work. pressure, lbs.	Wt. per 100 ft., lbs.
½	$ 48.25	2	31/32	175	36½
⅝	54.60	2	1 3/32	175	42½
¾	58.05	2	1 7/32	175	48½
1	72.57	2	1 31/64	175	62
1¼	121.32	2	1 51/64	150	81⅓
1½	150.29	2	2¼	125	89

Note—Lengths 101 to 175 ft., add 10% to above prices.

WHIPFLEX

A small tool or bench hose in all synthetic construction. Available in long lengths, braided construction. Special woven type strength member in carcass, with black tube and black smooth cover. Permits varied uses with air, water, oil, gasoline. A good hose at competitive prices.

Size, in.	Per 100 feet	OD, in.	Approx. work. pressure, lbs.	Wt. per 100 ft., lbs.
3/16	$16.36	13/32	250	8
¼	19.02	15/32	250	9

CONDOR BULL HOSE

Used where heavy duty air hose in larger sizes is needed for large compressor air lines, manifold lines, air operated mine and construction equipment, Jumbos, tunnel equipment, etc. Tough, black, synthetic oil-proof tube to resist deteriorating action of oils introduced into air line. Carcass built of plies of heavy duck, with breaker strip between carcass and 3/16 in. thick natural rubber cover to assure strong adhesion, and prevent cover from tearing loose. An extremely tough and durable hose, built for the most severe operating conditions. Very flexible.

50 Foot Lengths

Size, in.	Ply	Per foot	OD, in.	Approx. work. pressure, lbs.	Wt. per 100 ft., lbs.
2	6	$4.24	3 5/32	175	206
2½	7	5.55	3 23/32	175	265
3	8	6.93	4 5/16	175	342
4	7	9.00	5 17/32	175	500

WATER HOSE

CONDOR HOMO-FLEX

THE MANHATTAN RUBBER MFG. DIV.
OF RAYBESTOS-MANHATTAN, INC.
Condor Homo-Flex
WATER HOSE
MADE IN PASSAIC, N.J. U.S.A.

Designed for general water hose service where strength, extreme lightness and flexibility are needed. **Flexible as a Rope—Will Not Kink.** Homo-Flex construction combines tube, carcass, and cover into a homogeneous mass that is practically inseparable. Tube is of thick live natural rubber, with braids of super-strength cords embedded in natural rubber. A heavy cover of tough, abrasion resistant rubber assures long, trouble-free service, Mandrel made assuring uniformity of inside diameter.

50 Foot Lengths

Size, in.	Per 100 feet	OD, in.	Approx. work. pressure, lbs.	Wt. per 100 ft., lbs.
½	$ 54.73	29/32	300	27½
¾	63.39	1 7/32	250	42
1	79.30	1 7/16	200	53
1¼	105.54	1¾	175	63½
1½	118.00	2 1/32	175	74

Up to 1 in., 250 ft.; 1¼ and 1½ in., 100 ft. in a standard package.

CONDOR HEAVY DUTY HOMO-FLEX

Designed especially as team-mate for Heavy Duty Homo-Flex air hose where exceptionally rugged hose is needed for water lines on mine drills. Heavy gauge rubber tube, with carcass of braided cords of high strength. Cover extra thick to resist hard wear over rocks, etc. Has extremely high working pressure. Mandrel made. Can be used wherever a tougher than usual water hose is needed. Very light and flexible, easy to handle.

50 Foot Lengths

Size, in.	Per 100 feet	OD, in.	Approx. work. pressure, lbs.	Wt. per 100 ft., lbs.
⅜	$47.05	⅞	400	22
½	71.11	1 3/32	400	41
¾	98.41	1½	350	60½

250 ft. in a standard package.

DELHI

Mandrel Made; Duck Plied

A popular and economical grade of water hose, highly recommended for use where service is not too severe. Its construction, with a live tube; strong, wrapped plies, and a tough, long-wearing cover, provides a product well suited for average use.

50 Foot Lengths

Size, in.	Per 100 feet	Plies	OD, in.	Approx. work. pressure, lbs.	Wt. per 100 ft., lbs.
½	$ 46.00	3	29/32	150	25
¾	55.70	3	1 5/32	125	33
1	76.26	4	1 15/32	125	46
1¼	95.63	4	1¾	125	61
1½	106.54	4	2	110	72
2	141.63	4	2½	80	107
2½	174.33	4	3 1/16	65	143
3	232.42	4	3 23/32	50	186

½ to 1 in. incl., 250 ft.; 1¼ to 2 in., incl., 100 ft.; 2½ and 3 in., 50 ft. in a standard package.

WHIPCORD

A high quality, braided hose available in long continuous lengths, built for general water hose service. Has thick black rubber tube, with carcass of **Rayon** cord members, giving lightness to hose, yet making it unnecessary to use three braids in larger sizes to obtain high working pressures. All sizes two braid construction. Smooth black rubber cover.

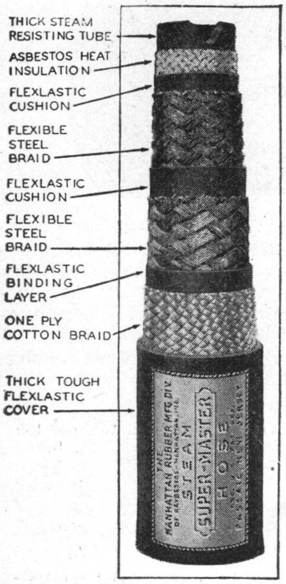
Continuous Lengths up to 100 Feet

Size, in.	Per 100 feet	Braids	OD, in.	Approx. work. pressure, lbs.	Wt. per 100 ft., lbs.
½	$ 35.68	2	57/64	150	27
¾	42.90	2	1 3/16	150	42
1	58.69	2	1 27/64	150	51
1¼	107.75	2	1¾	150	75
1½	117.39	2	1 61/64	150	87

Note—Lengths 101 to 175 ft., add 10% to above prices.

STEAM HOSE

SUPER-MASTER STYLE B-W WILL NOT BURST


THICK STEAM RESISTING TUBE
ASBESTOS HEAT INSULATION
FLEXLASTIC CUSHION
FLEXIBLE STEEL BRAID
FLEXLASTIC CUSHION
FLEXIBLE STEEL BRAID
FLEXLASTIC BINDING LAYER
ONE PLY COTTON BRAID
THICK TOUGH FLEXLASTIC COVER
THE MANHATTAN RUBBER MFG. DIV.
STEAM
SUPER-MASTER
HOSE

Mandrel Made; Wire Braid For Not Over 200 Lbs. Saturated Steam Pressure, 388° F.

A high pressure flexible steel wire braid inserted steam hose, designed for service in conducting steam at high pressure where ordinary constructions are inadequate. Greatly increased strength provided by the double braided wire carcass permits pulling and bending and withstanding high pressures without damage.

A special tube resists heat and steam, and a tough, heat and abrasion resisting cover protects the exterior from severe abuses.

Super-Master may be used for the usual intermittent service at steam pressures up to 200 lbs. per sq. in. for all sizes. It is not intended for high pressure or superheated steam for continuous periods of long duration or other service where the use of metal pipe is called for.

50 Foot Lengths

Size, in.	Per foot	OD, in.	Wt. per 100 ft., lbs.
½	$1.35	1¼	63
¾	1.95	1½	81
1	2.80	1¾	112
1¼	3.51	2	128
1½	4.20	2¼	146

½ to 1 in., inclusive, 250 ft.; 1¼ and 1½ in., 100 ft. in a standard package.

DELHI

Mandrel Made; Duck Plied

For Not Over 50 Lbs. Saturated Steam Pressure, 298° F.

A reliable, economical hose, highly recommended for general service. Over a live tube are placed plies of heavy duck separated by layers of heat-insulating rubber. Over this is placed a tough, long-wearing black cover.

50 Foot Lengths

Size, in.	Per foot	OD, in.	Wt. per 100 ft., lbs.
½	$0.80	1 3/16	41
¾	1.15	1 7/16	60
1	1.35	1 11/16	78

250 feet in a standard package.

AGRICULTURAL SUCTION HOSE

SMOOTH BORE

Plain Ends, Lengths to 50 Feet

Size, in.	Per foot	OD, in.	Wt. per ft., lbs.
¾	$1.40	1 3/16	.54
1	1.47	1 7/16	.59
1¼	1.60	1 11/16	.65
1½	1.78	1 15/16	.77
2	2.19	2 7/16	1.18
2½	2.85	2 15/16	1.65
3	3.54	3 11/16	2.70

SUCTION HOSE

CONDOR HOMO-FLEX, SMOOTH BORE

THE MANHATTAN RUBBER MFG. DIV.
OF RAYBESTOS-MANHATTAN, INC.
Condor Homo-Flex
REG. U.S. PAT. OFF.
SMOOTH BORE SUCTION
MADE IN PASSAIC, N.J. U.S.A.

Non-Metallic Reinforced

A general purpose suction hose for use where a small hose without metal in the body or bore is necessary, as in mines or underground construction projects where there is danger of explosions from sparks. This hose will return to its original shape if run over or if subjected to heavy shock loads from falling objects.

Constructed with a Flexlastic tube, two plies of heavy cotton duck, a spiral of special non-metallic reinforcement which permits the hose to return to original shape if accidentally crushed, a ply of heavy duck and a sturdy Flexlastic cover with corrugated outside surface.

Plain Ends; Lengths to 50 Feet

Size, in.	Per foot	OD, in.	Wt. per ft., lbs.
1	$2.52	1⅝	.85
1¼	2.85	1⅞	1.02
1½	2.90	2¼	1.38
2	3.24	2¾	1.96

CONDOR TYPE SB, SMOOTH BORE

Mandrel Made; Duck Plied, Round Galvanized Wire Reinforcement

The best grade of water suction hose for general service and for heavy fluids. Designed for heavy service; heavily constructed yet flexible for long hard use.

The round wire is embedded entirely in the wall of the hose thus allowing a perfectly smooth tube or waterway.

With King Nipples Wired-in; Length to 50 Feet

Size, in.	Per foot	OD, in.	Wt. per ft., lbs.
1½	$3.18	2 1/16	.98
2	3.66	2⅝	1.75
3	5.01	3 13/16	3.05
4	7.23	4 27/32	3.98

WIXOM TYPE SB, SMOOTH BORE

Mandrel Made, Duck Plied, Round Galvanized Wire Reinforcement

A lighter weight hose than Delhi but constructed on the same general principles. Designed for light service and very popular with street contractors.

Plain Ends; Lengths to 50 Feet

Size, in.	Per foot	OD, in.	Wt. per ft., lbs.
1½	$2.15	2	.88
2	2.52	2 9/16	1.30
3	3.91	3 11/16	2.40
4	6.12	4 11/16	2.90

All above, open stock.

NOTE

Standard Lengths—Suction Hose regularly furnished in standard lengths of 10, 12½, 15, 20, 25 and 50 ft.

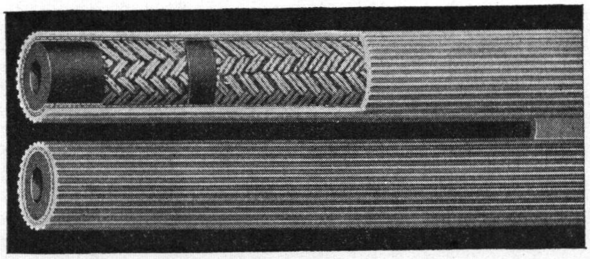
For King Nipples Wired-in

Add the following prices:

Size, in.	Per end	Size, in.	Per end
¾	$1.15	2	$2.64
1	1.47	2½	4.07
1¼	1.99	3	6.03
1½	2.25	4	8.18

WELDING HOSE

CONDOR DUPLEX



Molded-Braided; Red and Green

A twin hose that makes welding safer and more efficient than is possible with separate oxygen and acetylene lines. The two lines are held together by a permanent web joint, integrally molded and having great strength and flexibility, preventing tangling, kinking and snagging.

Strong Flexlastic tubes are smooth and non-porous. Finest high-tensile cord is used in braiding the reinforcement sections. The tough, flexible covers have maximum resistance to abrasion and aging.

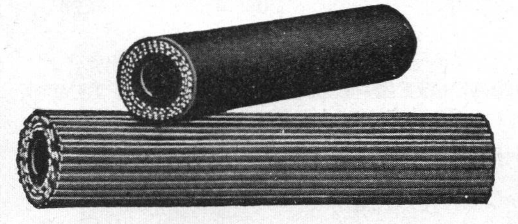
Continuous Lengths up to 100 Feet

Size, in.	Per 100 feet	Braids	OD, in.	Approx. work. pressure, lbs.	Wt. per 100 ft., lbs.
3/16	$39.88	1	15/32	250	17
¼	47.04	1	⅝	250	33
5/16	52.38	1	11/16	250	37

Note—Lengths 101 to 175 ft., add 10% to above prices.

500 ft. of a size in a standard package.

MANHATTAN "600" SERIES



Molded-Braided Corrugated

No. 600—Black

No. 601—Red

No. 602—Green

Has a black Synthetic tube, braids of strong cord, and a tough corrugated cover.

In ordering, specify color wanted.

Continuous Lengths up to 100 Feet

Size, in.	Per 100 feet	Braids	OD, in.	Approx. work. pressure, lbs.	Wt. per 100 ft., lbs.
3/16	$16.11	1	7/16	200	7
¼	23.28	2	⅝	225	15
5/16	25.94	2	11/16	225	17
⅜	28.56	2	¾	200	20

Note—Lengths 101 to 175 ft., add 10% to above prices.

500 ft. of a size in a standard package.

STREET AND SEWER HOSE

CONDOR

Mandrel Made; Duck Plied; Black Rubber Cover

Designed for street cleaning, sewer flushing and general contract work. Its attractive black Synthetic cover will withstand exposure to the elements and all atmospheric conditions. Rubber capped ends provide protection to the end of the hose.

Highest quality black Synthetic tube. Four plies of strong cotton duck form the body of the hose. The thick Synthetic cover gives it protection against rough treatment.

This hose is constructed to more than stand average city water pressures.

Pin lug or rocker lug expansion ring couplings are recommended. Double jacket couplings should be used.

50 Foot Lengths

Size, in.	Per foot	Plies	OD, in.	Wt. per ft., lbs
1½	$1.70	5	2 1/16	.92
2½	2.10	5	3	1.39
2	1.84	5	2 9/16	1.18

1½ in., 100 ft.; 2 and 2½ in., 50 ft. in a standard package.

GASOLINE AND FUEL OIL HOSE

PARANITE-G.O.P. (GAS-OIL-PROOF)

RAYBESTOS-MANHATTAN, INC.
MANHATTAN RUBBER DIVISION
PARANITE-G.O.P.
FUEL OIL, GASOLINE AND SOLVENT HOSE
REG. U.S. PASSAIC, N.J. PAT. OFF.

Mandrel Made; Molded-Braided

Designed for loading tank cars or trucks from racks where hose is immersed. May also be used for tank, truck service. It is not a service station pump hose.

Exclusive G.O.P. (gas-oil-proof) compound is used for both tube and cover, making it impervious to the destructive action of solvents and petroleum products.

Style "O"—Without wire

Style "OW"—Woven wire stiffened

50 Foot Lengths

Size, in.	Per foot	OD, in.	Style "O" Approx. work. press., lbs.	Style "O" Wt. per ft., lbs.	Style "OW" Approx. work. press., lbs.	Style "OW" Wt. per ft., lbs.
1	$0.80	1½	150	.60	250	.62
1¼	1.44	1 13/16	125	.82	225	.80
1½	1.77	2 5/64	100	.92	200	1.00
2	2.61	2 39/64	75	1.40	125	1.40
2½	3.09	3 3/16	60	1.90	100	2.00
3	3.72	3 13/16	50	2.30	75	2.60

Open stock.

CONDOR G.O.P. (GAS-OIL-PROOF)

Molded-Braided; Special Tube to Resist High Octane Gasoline; Red Cover

A long length hose with a special Synthetic tube. The body of the hose is made up of a high grade cotton jacket interwoven with a spiral of round wire. The G.O.P. cover is especially compounded to be oil and abrasive resistant. It will withstand rough handling, dragging over curbs, driveways and walks.

This hose is extremely flexible and will retain its flexibility regardless of climatic conditions.

Continuous Lengths up to 175 Feet

Size, in.	Per foot	OD, in.	Braids	Wt. per ft., lbs.
1	$1.38	1 19/32	3	.75
1¼	1.71	1⅞	3	.93
1½	2.04	2 3/32	3	1.15

Open stock.

PAINT SPRAY HOSE

CONDOR HOMO-FLEX G.O.P. (GAS-OIL-PROOF)

For light service in handling paint and lacquer. Thick G.O.P. tube to resist deteriorating effects of paint. Extremely flexible. Long wear, abrasion-resistant rubber cover.

Made to fit De Vilbiss and Binks couplings.

Long Lengths

Size, in.	Per 100 feet	OD, in.	Approx. work. pressure, lbs.	Wt. per 100 ft., lbs.
¼	$27.72	9/16	300	14
5/16	29.43	39/64	250	16
⅜	33.72	11/16	200	17
½	52.18	⅞	200	21

250 ft. in a standard package.

CREAMERY AND PACKERS' HOSE

CONDOR HOME-FLEX G. O. P.

RAYBESTOS-MANHATTAN, INC.
MANHATTAN RUBBER DIVISION
Condor HomoFlex G.O.P.
CREAMERY AND PACKERS HOSE
REG. U.S. PAT. OFF.
PASSAIC, N.J.
MADE IN U.S.A.

Mandrel Made; Braided Plied; White Cover

Extensively used in the dairy and meat packing industries. Highly flexible and steam and animal fat resistant. Balanced construction, with a steam-resistant tube and a thick cover that withstands the hard wear to which it is subjected.

Size, in.	Per foot	OD, in.	Wt. per 100 ft., lbs.	Tapered Nozzle Add, per end
½	$0.80	1⅛	35	$3.45
¾	.97	1¼	56	3.69
1	1.33	1⅝	70	4.12
1¼	1.56	1¾	86	4.75
1½	1.70	2⅛	103	5.11

½ to 1 in. incl., 250 ft.; 1¼ and 1½ in., 100 ft. in a std. pkg.

KORTLANDT

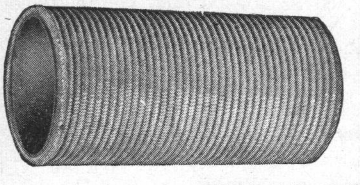
A more economical, mandrel built, duck plied hose of very high quality. Tube made of high grade rubber stock resistant to steam, especially adaptable for intermittent steam, and hot water service. Carcass constructed of plies of strong duck fabric, with white synthetic cover, highly resistant to action of grease, butter and animal fats and acids. Can be supplied with or without built on rubber nozzles.

Size, in.	Per100 ft.	OD, in.	Wt. per 100 ft., lbs.	Tapered Nozzle Add, per end
½	$ 68.52	1	27.8	$2.55
¾	71.98	1¼	37.7	2.73
1	101.60	1½	46.9	3.05

250 feet in a standard package.

COTTON MILL HOSE

WIXOM RUBBER LINED, SINGLE JACKET



A durable hose with good age-resisting tube and jacket woven from uniform length staple cotton.

For factories, warehouses and general fire protection.

Test pressure 200 lbs.

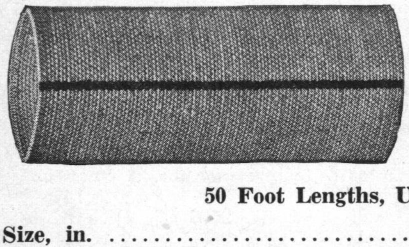
50 Foot Lengths, Uncoupled

Size, in.	1½	2½
Wt. per foot, lbs.	.34	.58
Per foot	$0.68	1.09

250 feet in a standard package.

LINEN FIRE HOSE

ECONOMY UNDERWRITERS, UNLINED



For installation at inside stand pipes and similar places where it can be kept dry, such as in heated rooms, corridors, etc.

Meets the specifications of the Associated Mutuals and Fire Underwriters.

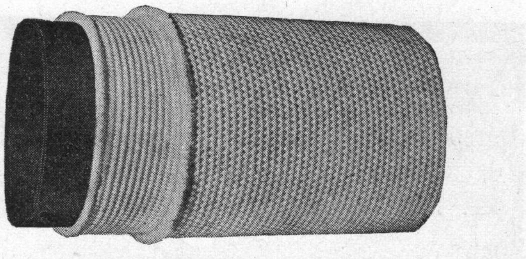
50 Foot Lengths, Uncoupled

Size, in.	1½	2½
Wt. per length, lbs.	7½	12
Per foot	$0.65	.43

Open stock.

MUNICIPAL FIRE HOSE

CORD DOUBLE JACKET, RUBBER LINED



Easy-Fold Construction

Evenly and uniformly woven jackets from extra heavy, long staple cotton, woven to exacting specifications, combined with the high grade non-acid forming tube and Easy-Fold construction assures a flexible hose that will withstand high pressures.

50 Foot Lengths, Coupled

Size, in.	Per foot	Test pressure, lbs.	Wt. per ft., lbs.
1½	$1.05	400	.59
2½	1.55	400	1.0

CYCLONE SINGLE JACKET, RUBBER LINED

Easy-Fold Construction

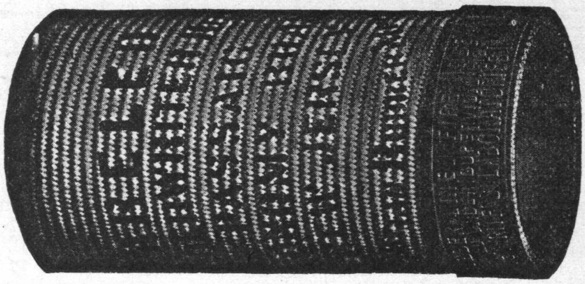
A high grade heavy duty Municipal Single Jacket hose built to withstand test pressure of 350 lbs.

50 Foot Lengths, Coupled

Size, in.	Per foot	Test pressure, lbs.	Wt. per ft., lbs.
1½	$0.85	350	.46
2½	1.30	350	.79

Open stock.

ECONOMY UNDERWRITERS LABELED, RUBBER LINED, FLAT FOLDING



Manufactured to comply with the specifications of the National Board of Fire Underwriters and the Associated Factory Mutual Fire Insurance Companies.

It is so constructed that it will assume a flat shape easily for compact folding, and will at the same time retain its maximum strength of fabric and tube while rounded out under pressure.

The tube is compounded with strong, age-resisting Flexlastics. The outer cotton jacket is tightly woven with selected and tested yarn of the highest grade.

Initial test pressure—double jacket, 400 lbs.; single jacket, 300 lbs.

50 Foot Lengths, Coupled

	Double Jacket		Single Jacket	
Size, in.	Per foot	Wt. per 100 ft., lbs.	Per foot	Wt. per 100 ft., lbs.
1½	$1.15	53.34	$0.86	40.33
2	1.49	74.18	.96	55.80
2½	1.77	96.03	1.18	72.6
3	2.55	137.10	....	....

250 ft. in a standard package

Mildew and Antiseptic Jacket Treatment

Single Jacket	per foot	**$0.15**
Double Jacket	per foot	**.18**

CHEMICAL ENGINE HOSE

CONDOR

THE MANHATTAN RUBBER MFG. DIV.
OF RAYBESTOS-MANHATTAN, INC.
PASSAIC, N. J.
LABELED
CHEMICAL
FIRE HOSE
TESTED TO 400 POUNDS

Mandrel-Made; Duck Plied, Red Cover

Manufactured to meet the strict requirements of the Underwriters Laboratory and to give long and satisfactory service under severe conditions.

Over a chemical-resisting and long-aging Flexlastic tube are multiple plies of strong duck. The red cover will withstand harsh treatment and wear well.

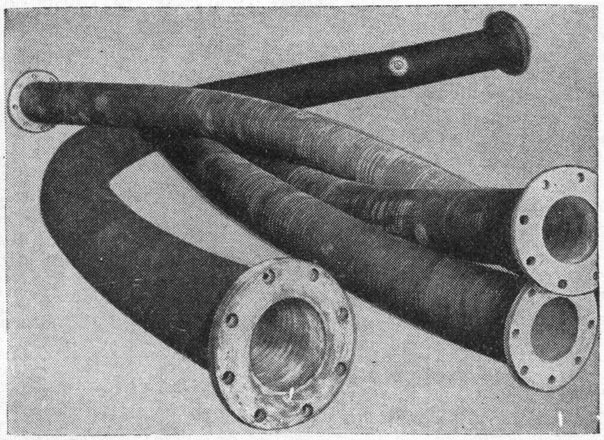
50 Foot Lengths

Size, in.	Per ft.	Plies	OD, in.	Approx. work. press., lbs.	Wt. per ft., lbs.
¾	$0.84	5	1¼	400	.42
1	1.13	6	1½	400	.55
1¼	1.32	6	$1\frac{13}{16}$	400	.65

¾ and 1 in., 250 ft.; 1¼ in., 100 ft. in a standard package.

FLEXIBLE RUBBER PIPE

CONDOR



Mandrel Made, Duck Plied, Wire Inserted

Being installed in place of steel or cast iron pipe on many types of installations. Rubber is more wear-resistant than iron or steel. This, with its light weight and ease of installation, is the reason why Condor Pipe is more economical for many purposes. Another advantage is the elimination of troublesome joints and fittings at bends and joints, reducing the possibility of leakage. It may be used on either suction or discharge lines.

Can be used to advantage in pipe lines subject to electrolysis, corrosion, abrasion, water hammer, noise and vibration. It is ideal for handling coal from overhead bunkers to automatic stokers, and can be used in pulverized coal installations where temperatures are not too high.

Can be furnished with or without built-on flanges, plain or enlarged ends, and in sizes under 4 in. (On application). Split metal retaining rings are used to prevent cutting by bolt heads.

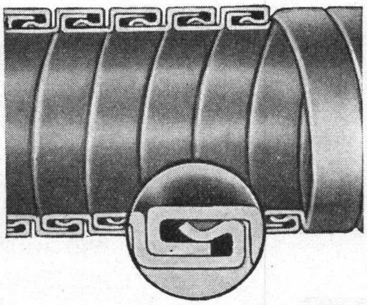
In Lengths up to 50 Feet

Size, in.	Plain ends, per ft.	Flanges, each	Retaining Rings, per set of 2	OD, in.	Discharge press., lbs.	Suction, inches of mercury	Wt. per ft., lbs.	Wt. flanges, per pair
4	$11.52	$16.02	$15.90	5½	135	28	7	1⅞
4½	13.58	16.75	17.40	6	135	28	7¾	2
5	14.08	17.42	18.75	6½	130	26	9¼	2½
6	15.96	19.80	20.62	$7\frac{11}{16}$	125	26	11	4¼
8	21.18	26.28	23.25	$10\frac{1}{16}$	125	24	16	6⅝
10	26.34	32.46	30.30	$12\frac{1}{16}$	100	24	19½	8
12	33.61	39.33	33.75	$14\frac{1}{16}$	80	20	24	10½
14	42.12	46.65	35.10	16⅜	80	20	31	13
16	48.06	50.19	39.75	18⅜	80	20	35	14

Standard package—any quantity.

FLEXIBLE METAL HOSE

REX-TUBE TYPE RT-15



Of Medium Flexibility and Pressure Rating

Construction: Fully interlocked.

Metals: Bronze or galvanized steel.

Packing: Asbestos, high grade.

Typical applications; steam hose, oil lines, tar and asphalt hose, tank car unloading, general utility hose, steaming tank cars; and Diesel exhaust.

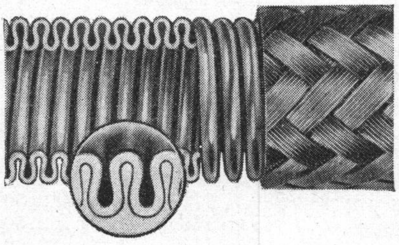
Packed-on reattachable couplings (for higher temperatures) and soldered couplings are available for this tubing. Standard pipe fittings can be brazed or welded to RT-15 for exhaust and similar applications where possible packing impairment by such attachments is not detrimental.

Ins. diam., in.	Bronze, per ft.	Galv. steel, per ft.	Nominal OD, in.	Appl. metal thick., in.	Nom. ID of bend, in.	Test pressure, lbs. Strt.	Test pressure, lbs. Bent	*Wt. per ft., lbs.
½	$1.00	$0.55	$\frac{43}{64}$	.017	8	750	...	.36
¾	1.65	.80	$\frac{63}{64}$	.024	13	500	400	.75
1	2.00	1.00	$1\frac{15}{64}$	.024	16	500	400	.97
1¼	2.70	1.20	$1\frac{17}{32}$	.029	20	400	300	1.45
1½	3.50	1.40	$1\frac{53}{64}$	.033	25	400	300	2.01
2	4.60	1.65	$2\frac{21}{64}$	.033	28	300	200	2.60
2½	5.50	2.10	$3\frac{53}{64}$	.033	32	300	200	3.21
3	7.10	2.50	3⅜	.037	40	250	150	4.17

*Weights are for bronze hose. Steel hose is approximately 10% lighter.

Note—Sizes 4 to 12 in. on request.

REX-TUBE TYPE RW-91



Medium Flexibility; for High Pressures Braided

Construction — Helical corrugations.

Metal—Steel (also available in bronze).

Packing — None — unimetal wall.

Typical applications; superheated steam lines, corrosive oil lines, high temperature service, various caustics, fuel lines, etc.

Can be furnished with Rex-Tite couplings which are mechanically attached. They are reusable and serviceable at both high pressures and high temperatures. Brazed or welded fittings and soldered couplings may also be used.

Ins. diam., in.	Per ft.	Nominal OD, in.	Min. ID of bend, in.	Min. recommended wkg. press. ID bend, in.	Burst pressure, lbs.	Wt. per ft., lbs.
$\frac{3}{16}$	$1.35	$\frac{27}{64}$	6⅞	9⅞	12,000	.17
¼	1.40	$\frac{35}{64}$	7⅜	10⅝	11,000	.25
$\frac{5}{16}$	1.45	$\frac{41}{64}$	8⅛	11⅛	8,000	.31
⅜	1.50	$\frac{47}{64}$	9	12½	7,500	.39
½	1.60	$\frac{57}{64}$	10	15	7,000	.50
¾	2.55	$1\frac{19}{64}$	15¼	19	5,000	.81
1	3.15	$1\frac{41}{64}$	16½	23	3,000	1.15
1¼	4.00	$2\frac{3}{64}$	17½	26	2,000	1.57
1½	5.15	$2\frac{13}{32}$	19	31	1,800	2.12

Note—Sizes 2 to 4 in. on request.

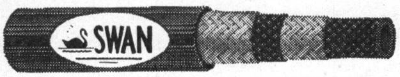
GARDEN HOSE

RUBBER

The new all-rayon cord, treated to give maximum strength and flexibility is almost three times as strong as ordinary hose yarn.

A cover of genuine Neoprene gives added strength and permanent protection against wear, abrasion, weathering, oil, acid, etc.

The patented Maxivolume solid brass coupling is permanently locked and sealed to the super strength hose carcass.



Green—Guaranteed 15 Years

Full ⅝ in.; smooth, tough inner tube reinforced with two braids of rayon cord, green neoprene cover, nickel plated coupling. Will not burst under 800 lbs. water pressure.

	Per coil
No. 127-25—25 ft. coil, coupled	$4.85
No. 127-50—50 ft. coil, coupled	9.25

Five coils in a carton.

	Per 100 ft.
No. 127-250—250 ft. coil, not coupled	$19.00

Weight per bale 80 pounds.

250 feet in a bale.

Red—Guaranteed 10 Years

Full ⅝ in.; smooth, tough inner tube, and a single braid of heavy rayon cord; attractive red cover of genuine neoprene; brass coupling. Will withstand 600 lbs. water pressure.

	Per coil
No. 708-25—25 ft. coil, coupled	$4.00
No. 708-50—50 ft. coil, coupled	7.60

Five coils in a carton.

	Per 100 ft.
No. 708-250—250 ft. coil, not coupled	$15.50

Weight per bale 70 pounds.

250 feet in a bale.

Black—Guaranteed 5 Years

Full ⅝ in.; single light rayon cord braid; black neoprene cover; brass coupling. Will withstand 400 lbs. water pressure.

	Per coil
No. 705-25—25 ft. coil, coupled	$3.60
No. 705-50—50 ft. coil, coupled	6.75

Five coils in a carton.

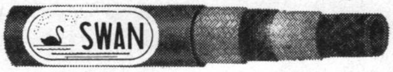
	Per 100 ft.
No. 705-250—250 ft. coil, not coupled	$14.00

Weight per bale 70 pounds.

250 feet in a bale.

GARDEN HOSE

RUBBER



Black—Industrial

A special purpose extra heavy duty industrial type hose for estates, golf courses, greenhouses, etc.

Full ¾ in.; two heavy rayon cord braids. Thick black neoprene cover; brass coupling. Will withstand 600 lbs. water pressure.

	Per coil
No. 205-25—25 ft. coil, coupled	$ 6.75
No. 205-50—50 ft. coil, coupled	12.75

25 ft., 10 coils; 50 ft., 5 coils in a carton.

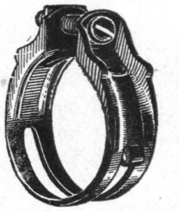
	Per 100 ft.
No. 205-250—250 ft. coil, not coupled	$25.00

Weight per bale 90 pounds.

250 feet in a bale.

HOSE CLAMPS

WROUGHT BRASS



No. 14

Tongue runs in channel holding it close to hose and making a uniform grip; pliable in band portion, grips tight and can be opened up, removed and used over again.

Stiff ears and heavy shoulders increase strength and rigidity where needed.

For Air Hose

Size hose, in.	Plies	Per dozen	ID open, in.	Dozen in carton	Wt. carton, lbs.
⅜	2	$ 0.78	⅝	2	½
⅜	3	.78	¾	2	⅝
½	2	.78	⅞	2	⅞
½	3	.78	$\frac{15}{16}$	2	1
⅝	3	.84	$1\frac{1}{32}$	2	1⅛
¾	3	.84	$1\frac{3}{16}$	2	1¼
¾	4	.84	1¼	2	1⅜

For Water Hose

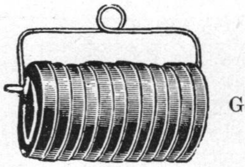
Size hose, in.	Plies	Per dozen	ID open, in.	Dozen in carton	Wt. carton, lbs.
1	3	$ 2.00	$1\frac{7}{16}$	2	3
1	4	2.00	$1\frac{17}{32}$	4	7½
1¼	3	2.50	$1\frac{21}{32}$	4	7
1¼	4	2.50	$1\frac{13}{16}$	4	7⅝
1½	3	3.00	$1\frac{15}{16}$	3	7½
1½	4	3.00	$2\frac{1}{16}$	3	7¾
2	3	4.00	$2\frac{9}{16}$	2	6¼
2	4	4.00	$2\frac{9}{16}$	2	6¼
2½	3	7.00	$3\frac{1}{16}$	1	4¼
2½	4	7.00	$3\frac{1}{16}$	1	4¼
3	3	10.00	3¾	1	6
3	4	10.00	3¾	1	6

For Steam Hose

Size hose, in.	Plies	Per dozen	ID open, in.	Dozen in carton	Wt. carton, lbs.
¾	3	$ 2.00	$1\frac{7}{16}$	6	9
¾	4	2.00	$1\frac{17}{32}$	4	6⅝
1	3	2.50	1⅝	4	7
1	4	2.50	$1\frac{21}{32}$	4	7
1¼	3	3.00	$1\frac{15}{16}$	3	7½
1¼	4	3.00	$1\frac{15}{16}$	3	7½
1½	3	3.50	$2\frac{7}{32}$	2	8¼
1½	4	3.50	$2\frac{7}{32}$	2	8¼
1½	5	4.00	$2\frac{13}{32}$	2	5⅞
2	3	5.50	$2\frac{11}{16}$	2	6¼
2	4	5.50	$2\frac{11}{16}$	2	6¼
2	5	6.50	2⅞	1	4⅛
2½	3	8.50	3¼	1	5
2½	4	8.50	3¼	1	5
2½	5	9.50	$3\frac{9}{16}$	1	5½

HOSE WASHERS

RUBBER

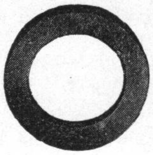


On Wire Clip

Good quality rubber.

	Per dozen clips
No. 78-A—¾ in., one dozen on a wire clip; wt. per dozen clips ¾ lb.	$0.60

Three dozen clips in a box.



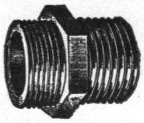
Good Quality Rubber

Size, in.	1	1¼
Per 100	$0.90	1.20
Size, in.	1½	2
Per 100	$1.65	3.75

Open stock.

HOSE NIPPLES

CAST BRASS

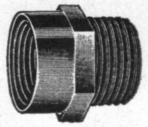


No. 19—Male

Iron pipe thread on one end; ¾ in. hose thread other end.

IP thread, in.	Per dozen	Wt. dozen, lbs.
½	$3.60	2½
¾	3.60	2½
1	6.00	3

Open stock.



No. 18—Male and Female

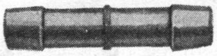
Iron pipe thread female end; ¾ in. hose thread male end.

IP thread, in.	Per dozen	Wt. dozen, lbs.
½	$3.60	2¼
¾	3.60	2½
1	8.88	3½

Open stock.

HOSE JOINERS

STAYPUT BRASS

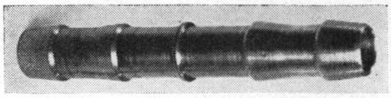


For Welding Hose

Nos.	ID hose, in.	Each	Lgth., in.	Hole, in.	Wt. pkg., lbs.
B-14-S	¼	$0.16	1¾	$\frac{3}{16}$	½
B-38-H	⅜	.21	2¼	$\frac{5}{16}$	¾

Twenty-five in a package.

STAYPUT BLUED STEEL



For High Pressure Spray Hose, Steam Hose, Etc.

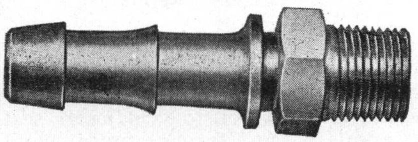
For use where there is heavy end strain when dragging long lengths of hose.

Nos.	ID hose, in.	Each	Lgth., in.	Hole, in.	Wt. pkg., lbs.
XL-12 -H	½	$0.30	4¾	.364	3
XL-34 -H	¾	.42	5	.622	5
XL-100-H	1	.47	5	.824	4¼

Nos. XL-12-H and XL-34-H, twenty-five; No. XL-100-H, fifteen in a package.

HOSE STEMS

NORGREN GIANT GRIP



Steel

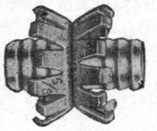
Machined with two deep steps for use in connection with wire bindings or hose bands.

Nos.	Each	For hose ID, in.	Male IPT, in.	Wt. ea., oz.
23-2	$0.275	⅜	¼	2
23-3	.275	⅜	⅜	2¾
43-3	.275	½	⅜	2¾
43-4	.33	½	½	3⅛
53-4	.495	¾	½	6
53-6	.495	¾	¾	6
63-6	.66	1	¾	7¼
63-8	.66	1	1	12⅛

Open stock.

HOSE MENDERS

SHERMAN LONG GRIP, GARDEN



No. 12-CL—With Staggered Fingers

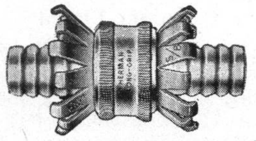
One-piece heavy wrought brass body; rust-proofed special soft steel, heavy finger members.

The staggered fingers grip farther back from the end of the hose and press tightly against the multiple corrugated tail piece.

For hose, in.	Per dozen	Dozen in carton	Wt. doz., lbs.
½	$1.74	2	2
⅝	1.74	2	2
¾	1.74	2	2

HOSE COUPLINGS

SHERMAN LONG GRIP, GARDEN



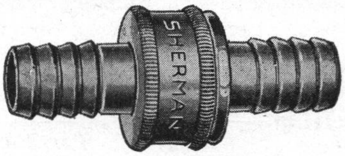
No. 77CL—Cut Thread; with Staggered Fingers

Heavy wrought brass body and tail piece; rust-proofed special soft steel, heavy finger members.

The staggered fingers grip farther back from the end of the hose and press tightly against the multiple corrugated tail piece.

For hose, in.	Per dozen	Dozen in carton	Wt. dozen, lbs.
½	$4.20	1	2½
⅝	4.20	1	2½
¾	4.20	1	2½

SHERMAN STANDARD, GARDEN



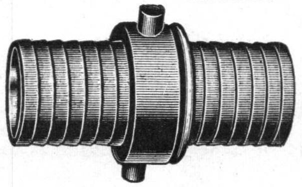
No. 77—Cut Thread

Heavy wrought brass; standard weight full length tails, with multiple corrugations; double knurled nut, washer retaining.

For hose, in.	Per dozen	Dozen in carton	Wt. dozen, lbs.
½	$3.60	1	1⅞
⅝	3.60	1	1⅞
¾	3.60	1	1⅞

HOSE COUPLINGS

WATER



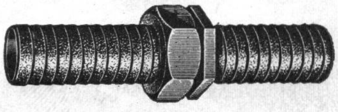
Always Supply Thread Information When Ordering to Avoid Delay

Cast Brass

1¼, 2 and 2½ in. sizes have lugs on female half only; 3 in. size has lugs on both halves.

	Each			Wt. ea.
		Half Coupling		complt.,
Size, in.	Complete	Female	Male	lbs.
1¼	$1.60	$1.08	$0.80	¾
1½	2.10	1.40	1.05	1
2	3.34	2.24	1.18	2
2½	6.00	4.00	3.00	2¾
3	8.00	5.34	4.00	4½

STEAM



Cast Brass

Long shank permits use of more than one clamp on each end. Commonly used on hose for steam, oil, gasoline and other purposes where extra precautions must be used to prevent blowing off or leakage. **Always furnished iron pipe thread.** Other threads furnished at an additional charge.

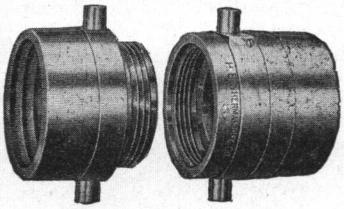
The ½ in. size is furnished with ¾ in. IPT unless ½ in. IPT is specified.

	Each			Wt. ea.
		Half Coupling		complt.,
Size, in.	Complete	Female	Male	lbs.
½	$1.64	$1.10	$0.82	½
¾	1.64	1.10	.82	¾
1	1.96	1.30	.98	1
1¼	2.60	1.74	1.30	1¾
1½	3.26	2.18	1.64	2¼
2	4.56	3.04	2.28	3½

All above, open stock.

FIRE HOSE COUPLINGS

EXPANSION RING



Polished Yellow Brass

Two expansion rings and one rubber washer furnished with each set of couplings.

For S. J. Hose

For single jacket cotton rubber lined and unlined linen mill hose.

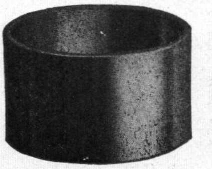
Size, in.	Per set	Wt. per set, lbs.
1½	$ 6.80	1¾
2	9.20	2½
2½	10.50	3½

For D. J. Hose

For double jacket cotton lined mill hose.

Size, in.	Per set	Wt. per set, lbs.
1½	$ 6.90	1¾
2	9.20	4¼
2½	10.65	5½

EXPANSION RINGS ONLY



Polished Brass

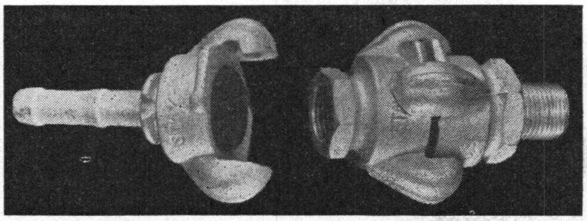
Material is a special brass mixture with high copper content calculated to stand expansion, and rings are annealed to exactly the right temper. Both edges are carefully rounded to prevent cutting hose.

OD, in.	Lgth., in.	Per dozen	Wt. doz., lbs.	OD, in.	Lgth., in.	Per dozen	Wt. doz., lbs.
1	¾	$2.15	⅜	2½	1⅛	$5.75	1¾
1½	¾	3.30	⅝	2½	1¼	6.65	2
2	1⅛	4.10	1½	2½	1½	7.55	2⅜

Open stock.

HOSE COUPLINGS

STAYPUT UNIVERSAL



Designed with special groove or shoulder so "tie-wires" can be used to tie coupling to clamp.

Special Yellow Brass

Nos.	Each	ID hose, in.	Wt. pkg., lbs.	Nos.	Each	ID hose, in.	Wt. pkg., lbs.
Hose Shanks							
UHB-38	$0.88	⅜	5	**UHB-34**	$0.88	¾	6¼
UHB-12	.88	½	5	**UHB-100**	.88	1	7¼
UHB-58	.88	⅝	5¾				
Male Couplings				**Female Couplings**			
UMB-12	$0.88	½ IPT	6	**UFB-38**	$0.88	⅜ IPT	5
UMB-34	.88	¾ IPT	7½	**UFB-12**	.88	½ IPT	5¼
UMB-100	.88	1 IPT	7¾	**UFB-34**	.88	¾ IPT	5¾
				UFB-100	.88	1 IPT	5½
Malleable Iron, Cadmium Plated							
Hose Shanks							
UHM-38	$0.72	⅜	5	**UHM-34**	$0.72	¾	6¼
UHM-12	.72	½	5	**UHM-100**	.72	1	7¼
UHM-58	.72	⅝	5¼				
Male Couplings				**Female Couplings**			
UMM-38	$0.72	⅜ IPT	5½	**UFM-38**	$0.72	⅜ IPT	5
UMM-12	.72	½ IPT	6	**UFM-12**	.72	½ IPT	5¼
UMM-34	.72	¾ IPT	7½	**UFM-34**	.72	¾ IPT	5¾
UMM-100	.72	1 IPT	7¾	**UFM-100**	.72	1 IPT	5½

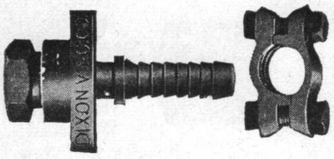
Ten in a package.

No. UG—Rubber Gaskets ....Each $0.06
No. OR—Oil-Resistant Gaskets ....Each .085

HOSE COUPLINGS

"GJ-DIXON" GROUND JOINT, AIR HAMMER

Cadmium Plated

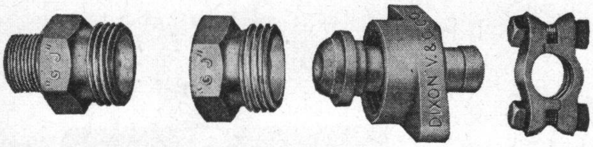


These ground joint, washerless couplings give splendid service in rock drill work of all types. They are excellent for mining, for construction work, for quarries, etc.

Instead of employing a washer, the steel spud of the "GJ-Dixon" has a copper inserted seat which fits against the steel radius head of the stem. This gives an airtight, soft-to-hard metal seal that is easily and quickly made, and which is not affected by even the most severe service conditions.

Each half of the two-bolt "Dixon" Clamp furnished with this coupling dovetails with the other half to form a perfect fit around the hose. Clamp is easily attached or reattached anywhere on the job without special tools.

Although the "GJ-Dixon" conforms exactly in outward appearance and threading to the accepted standard for air hammer couplings, it must be remembered that washer type spuds of the usual design will not work with this coupling, because the copper insert in the spud is essential to a proper seal.



Male spud Female spud Stem Wing nut Clamp

Steel Spuds—These parts have a built-in copper seat to seal against the steel radius head of the stem. One end has standard taper male or female iron pipe thread; other end, fitting wing nut has coarse thread of the following dimensions:

Style XLD-41 is threaded $1\frac{31}{64}$ in. OD, 8 threads per inch

Style XHD-52 is threaded $1\frac{47}{64}$ in. OD, 8 threads per inch

Note—These are not pipe threads.

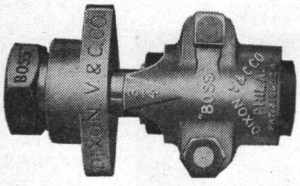
Compact Type, Style XLD-41—A well balanced, compactly built coupling. The same wing nut is used for both sizes, thus a ¾ in. spud may be used in a ½ in. coupling, or a ½ in. spud in a ¾ in. coupling.

Heavy Type, Style XHD-52—This is a larger, more heavily constructed coupling built to accommodate 1 in. heavy duty air hose.

	Compact Type, Style XLD-41				**Heavy Type, Style XHD-52**	
	½ in.		¾ in.		1 in.	
	Part No.	Each	**Part No.**	Each	**Part No.**	Each
Coupling —Female	**GDF-6**	$2.52	**GDF-8**	$2.58	**GDF-12**	$3.54
Complete—Male	**GDM-5**	2.76	**GDM-7**	2.82	**GDM-11**	3.88
Stem	**GBA-45**	.72	**GBA-46**	.72	**GBB-11**	1.00
Wing Nut	**J-47**	.60	**J-47**	.60	**DL-12B**	.96
Female Spud	**GJ-65**	.90	**GJ-55**	.90	**GDL-13**	.98
Male Spud	**GJ-60**	1.14	**GJ-50**	1.14	**GDL-10**	1.32
Clamp	**J-48**	.30	**J-49**	.36	**DL-14**	.60
Wt. complete coupling, lbs.	1.8		2		3	

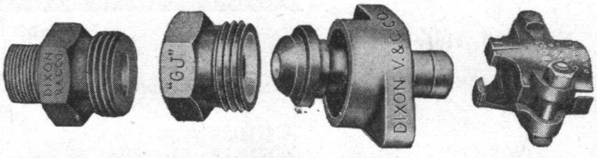
"GJ-BOSS" GROUND JOINT, AIR HAMMER

Cadmium Plated



These "GJ-Boss" Couplings are identical to the "GJ-Dixon" above except that the "GJ-Boss" couplings use a Boss type clamp while the "GJ-Dixon" couplings use a plain clamp.

Malleable Iron Clamp—"GJ-Boss" Air Hammer Couplings are attached to the hose with the "Boss" Interlocking Clamp. The extended fingers of this clamp engage over a collar on the coupling stem to firmly anchor the entire coupling to the hose. The two clamp halves have dovetailing members which come together as bolts are tightened to form a perfect fit completely around the hose for the entire length of the clamp body. Furnished complete with cadmium plated machine bolts and hex nuts.



Male spud Female spud Stem Wing nut Clamps

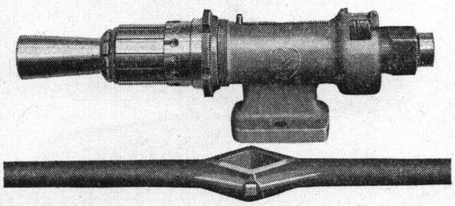
	Compact Type, Style XLB-61				**Heavy Type, Style XHB-72**	
	½ in.		¾ in.		1 in.	
	Part No.	Each	**Part No.**	Each	**Part No.**	Each
Coupling —Female	**GBF-6**	$2.58	**GBF-8**	$2.76	**GBF-12**	$3.72
Complete—Male	**GBM-5**	2.82	**GBM-7**	3.00	**GBM-11**	4.06
Stem	**GBA-45**	.72	**GBA-46**	.72	**GBB-11**	1.00
Wing Nut	**J-47**	.60	**J-47**	.60	**DL-12B**	.96
Female Spud	**GJ-65**	.90	**GJ-55**	.90	**GDL-13**	.98
Male Spud	**GJ-60**	1.14	**GJ-50**	1.14	**GDL-10**	1.32
Clamp	**B-4**	.36	**B-9**	.54	**B-14**	.78
Wt. complete coupling, lbs.	1.7		2.2		3.7	

All above, open stock.

There are Many Different Styles of Dixon Couplings. This Makes it Imperative that We Have the Dixon Number for Each Individual Part Ordered.

HOSE COUPLING EXPANDERS

ELKHART UNBREAKABLE



No. 405—Manganese Bronze Body

Instantaneous change of segment sizes; no screw threads.

Unbreakable segments of high tensile strength manganese bronze.

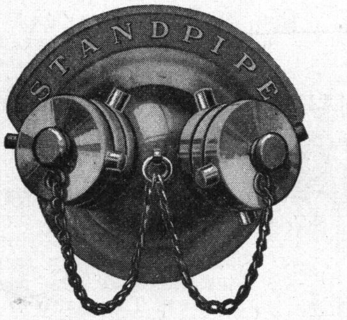
Automatic stop on screw prevents damage to segments when releasing.

Individual adjusting rings insure proper clearance for coupling waterway.

Size, in.	Each	Wt. each, lbs.
1½	$37.40	12½
2½	46.50	24¼

STANDPIPE SIAMESE

WALL PLATE



No. 156—Highly Polished Bronze

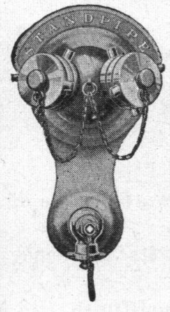
Fitted with two fire department inlets and 4 or 6 in. outlets.

Has double clapper valves, plugs and chains.

Two 2½ in. inlets.

Outlet, in.	Each	Ht. over all, in.	Width over all, in.	Projects from wall, in.	Wt. each, lbs.
4	$46.70	11⅛	12½	10½	21
6	58.80	11⅛	12½	11½	29

WALL PLATE, WITH SILL COCK



No. 155—Highly Polished Bronze

Same as No. 156 above but with ¾ or 1 in. sill cock at bottom for sprinkling hose. Complete with cap, chain and key.

Two 2½ in. fire department inlets.

19 in. long over all; 12½ in. wide over all.

Outlet, in.	Each	Projects from wall, in.	C to C pipe opening to sill cock	Wt. each, lbs.
4	$58.80	10½	9⅝	17
6	73.30	11½	10	22

All above, open stock.

STANDPIPE SIAMESE

SINGLE CLAPPER

No. 5—45° Curved Body

Single clapper valve permits use of one stream or both.

Rough finish bronze.

Two 2½ in. inlet.

Outlet, in.	Each	Wt. each, lbs.
3	$15.85	15
4	16.90	15

HOSE VALVES

CHICAGO PATTERN

No. 85—Bronze

Rough body, polished trim.

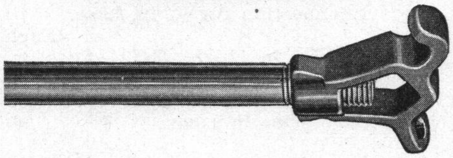
Regularly furnished with Chicago hose thread; or will be furnished with California hose thread or iron pipe thread on all sizes, at regular prices. Any other style thread will be extra. In ordering always specify the thread required.

Rubber or leather disc; male outlet only.

Size, in.	Plain, each	Wt. each, lbs.
1	$3.20	2½
1¼	3.85	3
1½	4.75	4¼
2	7.20	6¼
2½	8.65	8

HYDRANT WRENCHES

ADJUSTABLE COMBINATION WRENCH AND SPANNER

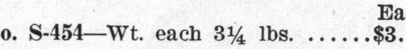


For Pin Lug and "Slidewell" Couplings

Easy to adjust to any size pentagon by a slight turn of handle.

Head of high tensile strength aluminum; tool steel handle.

	Each
No. S-454—Wt. each 3¼ lbs.	$3.10



For Pin Lug Couplings Only

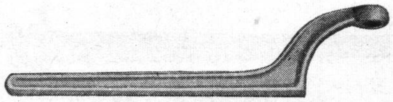
Aluminum head; tool steel handle.

	Each
No. 454—Wt. each 3 lbs.	$2.50

All above, open stock.

HOSE SPANNERS

COMMON



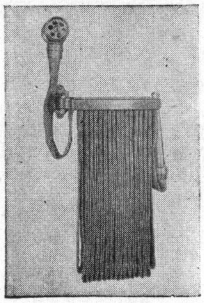
Galvanized Iron

Nos.	S-1	S-2	S-3	S-11	S-12
Size, in.	1½	2	2½	3	4
Wt. doz., lbs.	6	7	9	13	16½
Per dozen	$5.55	6.65	7.55	11.05	12.75

Open stock.

FIRE HOSE RACKS

ALLEN BOWES



Style E—For Unlined Linen Hose With Wall Bracket

Releases the hose readily either with or without water pressure. With the water turned on first the cover controls the pressure until all but the last fold is withdrawn.

Carried forward on the sliding pins, the hose comes off the rack loop by loop, and the pins remain on the extension arm. Hose cannot jam.

Regularly furnished in aluminum finish; can be furnished in gold bronze or red enamel at sames prices. Also available on special order in white enamel, nickel plated, flat black plated and chromium plated.

Nos.	Each	For hose, in.	Ht., in.	Projection from wall, in.	Wt. each, lbs.
For 50 Feet of Hose					
30	$5.00	1¼	20½	17¼	5½
31	5.00	1½	20½	18	6
32	5.00	2	20½	19	7
33	5.00	2½	20½	19⅛	7¾
For 75 Feet of Hose					
30A	$5.50	1¼	24	20¾	6
31A	5.50	1½	24	21	6¼
32A	5.50	2	24	22	7½
33A	5.50	2½	24	22⅛	8¼
For 100 feet of Hose					
34X	$6.00	1¼	26½	22¾	6½
34	6.00	1½	26½	23	6¾
35	6.00	2	26½	24	8
36	6.00	2½	26½	24⅛	9

Open stock.

Note—We can furnish Style G, with valve nipple and angle valve; and Style F, with pipe clamp.

Hose Cabinets, Fire Extinguisher Cabinets, etc. are also available.

Information and Prices on Request

HOSE PIPES

UNDERWRITERS' APPROVED

Screw Tip, Swivel Handle

Marlin wound; painted red.

Approved by Associated Factory Mutual Fire Insurance Companies.

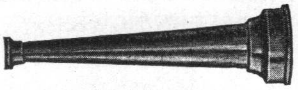
Each

2½x30 in.—Wt. each 10¼ lbs. $29.00

Open stock.

FIRE HOSE NOZZLES

PLAIN



Cast Brass

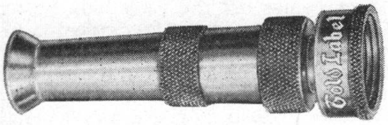
Full weight, beautifully finished. Carefully designed, putting strength in the right place and improving appearance. Recessed for washers. ¾ and 1 in. sizes iron pipe thread, size marked * state thread wanted.

Size, in.	Per dozen	Length, in.	Wt. per dozen, lbs.
¾	$1.40	6	4
1	1.73	8	7¼
*1¼	2.80	10	10½
*1½	3.40	10	18
*2	6.20	12	21
*2½	9.10	12	46½

Open stock.

GARDEN HOSE NOZZLES

GOLD LABEL



Heavy Cast Bronze

Spray point moves up and down as sleeve is rotated while sleeve is in same position. The spray point being integral with the threaded sleeve is always perfectly centered.

No packing wear due to the up and down movement of sleeve. Perfect adjustment for any type of spray, including full stream.

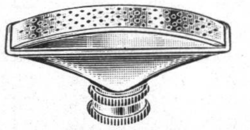
Per dozen

No. 155—¾ in. hose coupling; wt. per dozen 5⅝ lbs. $13.20

One dozen in a carton.

LAWN SPRINKLERS

FLAT SPRAY



Stamped Brass

Gives a fine, fan shaped spray.

For sprinkling parkways, flower beds, new grass, young plants.

¾ in. garden hose connection with an inserted hose washer.

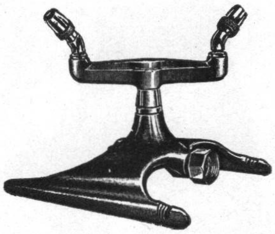
Each

No. 7047—4¾x1 in. perforated top; wt. per box 1⅞ lbs. $0.50

Six in a box.

LAWN SPRINKLERS

PARKSIDE



Nozzle Type

Use revolving or stationary—sprays or streams—large to small areas.

Does equally well on high or low pressures. Cast brass nozzles can be set to throw fine mists for newly seeded lawns and delicate flowers, or to discharge streams for completely saturating areas 50 ft. or more in diameter. May be adjusted to water small or large areas, half circles, irregularly shaped plots.

Red baked enameled base and arm; chromium plated nozzles, bearing sleeve, stop lock, and swivel.

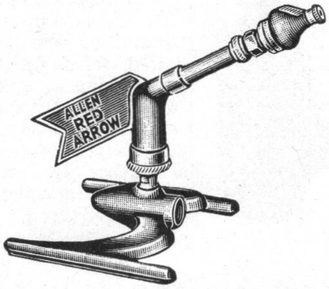
Swivel connection for ¾ in. hose.

Each

No. 7003—7 in. high, 6¾x8 in. base; wt. each 2¾ lbs. $4.50

One in a box, twelve in a carton.

RED ARROW



Rotary Type for Large Lawns

It sprinkles an area of 60 ft. or more in diameter.

Used on estates, cemeteries, parks, golf greens, and fairways. Will operate regardless of the contour of the lawn. Designed to give an even distribution of water. Base will not dig into and destroy fine turf.

Red baked enamel finish with chromium plated head; bearing and swivel.

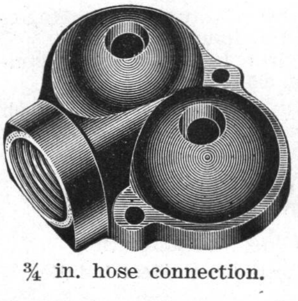
Swivel connection for ¾ in. hose.

Each

No. 7020B—10 in. high, 7x7¼ in. base, length of arrow 12½ in.; wt. each 5 lbs. $8.00

One in a box.

ROSE LAWN



Twin Type

Pressure die-cast from "Hecoloy" a specially developed high grade casting alloy.

¾ in. hose connection.

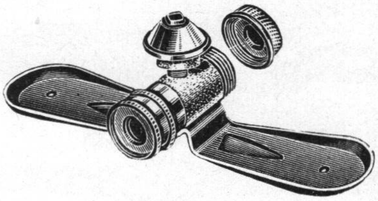
Per dozen

No. L2T—3x3½ in.; wt. per dozen 5 lbs. $4.20

One dozen in a box.

LAWN SPRINKLERS

CHICAGO CIRCULAR ADJUSTABLE MULTIPLE SERIES



Brass Head and Body

Cast brass body with stamped brass head, rigidly attached to flat steel red enameled base.

A fine mist spray is distributed in the form of a square. The sprinklers are usually used connected in series with short lengths of hose. The adjustable head permits regulating the rate of discharge from each head to assure even distribution.

Two end caps, furnished with each four sprinklers.

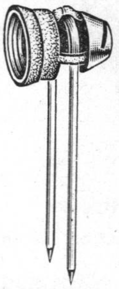
¾ in. swivel hose connection.

Per set of four

No. 4573—2 in. wide, 8⅞ in. long; wt. per set 3 lbs. $5.52

One set of four in a box.

ALLENCO "SPIKE" HALF CIRCLE



Cast Brass

For sprinkling along sidewalks and terraces.

Throws a 20 ft. fine fan-shaped spray away from the sidewalk onto the parkway and lawn. The depth of spray is controlled by the angle at which the "Spike" is set into the ground. The 3/32 in. slotted discharge opening gives an even spray.

Has two spikes to hold it steady in the ground.

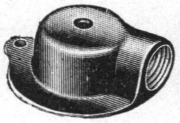
¾ in. swivel hose connection.

Each

No. 4519—5¼ in. high; wt. per box 3½ lbs. $0.70

Twelve in a box.

CBG



Cast Iron

Operates on a world-known principle of tangential spray.

Very popular for both its efficiency and its low cost.

Baked-on bright red enamel finish.

¾ in. solid hose connection.

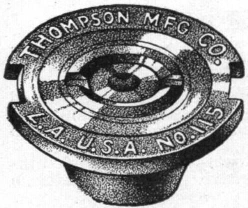
Each

No. 54—3½x3⅞ in. base, 1 7/16 in. high; wt. per box 7½ lbs. $0.75

Six in a box.

CONCEALED LAWN SPRINKLER HEADS

THOMPSON FULL-CIRCLE



Adjustable; Brass Lined

Body cast of zinc and copper alloy in gravity molds; nozzle core machined from brass rod.

Adjustment is made by screwing core up or down, core has built-in strainer.

Corrosion of body prevented by copper and cadmium plating.

½ in. Iron Pipe Thread

Nos.	115-Special	115-A	115-B	115-C	115-D
For spacing, ft.	10	12	14	16	18
Each	$0.84	.84	.84	.84	.84

Weight per case 48 pounds.
10 in a carton, 100 in a case.

THOMPSON HALF-CIRCLE

THOMPSON MFG. CO.
L.A.-U.S.A.-NO.140

Adjustable; Brass Lined

Body cast of zinc and copper alloy. Nozzle mounted in removable nozzle base having built-in strainer.

Outside screw adjustment.

Designed for use along borders of various widths.

Body is copper and cadmium plated to prevent corrosion.

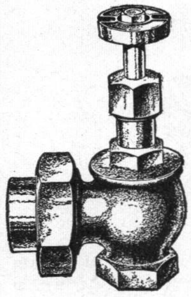
½ in. Iron Pipe Thread

Nos.	140–3	140–6	140–9	140–12	140–15
For strip, ft.	3	6	9	12	15
Each	$0.84	.84	.84	.84	.84

Weight per case 41 pounds.
10 in a carton, 100 in a case.

WATER CONTROL VALVES

THOMPSON ANGLE



Heavy Type, With Union

Heavy red brass castings, regularly fitted with slotted shut-off wheel for operating with valve key.

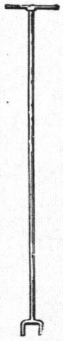
Full opening allows unobstructed flow of water.

Tested for 200 lbs.

No. 440—Iron Pipe Threads

Size, in.	¾	1	1¼	1½	2	2½	3
Wt. each, lbs.	2½	3¼	4½	5¾	8¾	13	23½
Each	$3.84	5.28	7.38	9.54	14.16	21.36	38.64

Open stock.



VALVE KEYS

THOMPSON

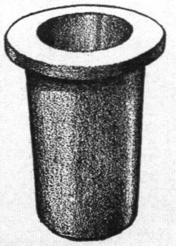
Made to fit in slotted wheel of No. 440 control valve.

Available in lengths for buries from 6 to 60 in.

Prices on Request

VALVE SLEEVES

THOMPSON



Cast Iron, Black Dipped

Required with all control valves in systems where the valves are installed below or near the ground level. Slips over the valve stem holding back the earth and protecting the valve from possible damage.

Each
No. 445—3⅝ in. high; wt. each 1⅛ lbs. $0.66

Open stock.

Note—We carry stop and drain valves for draining sprinkler systems. Refer to index.

POWER LAWN MOWERS

JOHNSTON LAWN PATROL

Self-Propelled

Engine—4-cycle, 1.6 HP.

Engine Equipment—Oil bath cleaner, one quart gasoline tank, recoil starter, magneto ignition, and built-in governor.

Clutch—Engages either automatically or by convenient knob on handle.

Drive—Simple V-belt from engine to sturdy power shaft which is mounted on self-oiling, self-aligning bronze bearings. From power shaft to reel drive is through heavy duty roller chains and hardened steel sprockets.

Chassis—High grade steel construction throughout, including rigid cutter bar, side frames and wheels.

Reel—6 in. diam. Five heat-treated special alloy steel blades. ¾ in. steel reel shaft mounted on oil and dust shielded ball bearings.

Bed Knife—Rigid steel section for perfect alignment with removable lipped blade of heat-treated chrome molybdenum steel highly resistant to wear.

Adjustment—Precision adjustment by single micrometer thread screw on each side of cutter bar.

Cutting Height—Low ⅜ in., high 2½ in.

Traction Wheels—Sturdy, all steel, with hardened steel internal gear; oilite bronze bearings.

Pinion Gears—Long life, laminated all steel. Pawl drive directly in line with gear teeth.

Tires—10.50x1.75 air cushion tires, ribbed tread.

Rear Roller—Three section for easy turning, 2¾ in. diam. selected hardwood.

Speed Range—Automatically controlled at throttle setting convenient to operator.

Handle—Strong tubular steel; rubber grips.

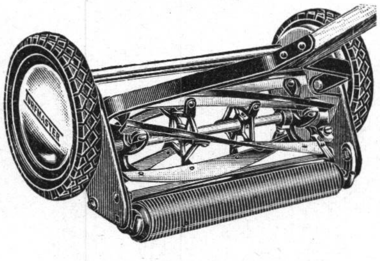
Finish—Baked enamel.

Cutting width, in.	21
Shipping wt. each, lbs.	105
Each	$124.50

One in a crate.

LAWN MOWERS

TURFMASTER, BALL BEARING



Self-Sharpening

A streamline mower. Semi-pneumatic rubber tired wheels with chromium hub caps. Attractive steel handle.

Ball bearing revolving cutter. Alloy steel knives.

Extra heavy, lipped, alloy steel bed knife.

Large chromium shrub rod. Large rubber roller.

6 inch diameter cutter.

Attractively finished.

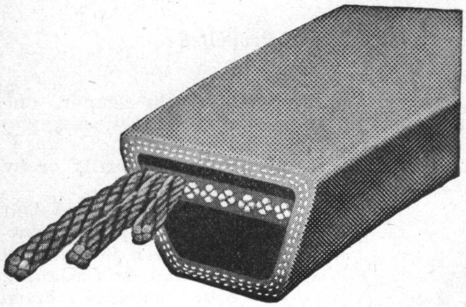
10 in. Diameter Drive Wheels; 5 Blades

Cutting width, in.	16	18
Wt. each, lbs.	48	50
Each	$24.50	25.50

Open stock.

V-BELTS

CONDOR, FOR MULTIPLE GROOVE SERVICE



Improved for Heavier Duty with Strength Members of Rayon

The strength members in Condor V-Belts are improved with rayon. They are imbedded in a neutral axis of heat dissipating rubber so that every V-belt runs cool internally despite constant flexing.

Manhattan's methods of making Condor V-Belts insure against laggard belts and unbalanced strain on working belts. Prestretching during manufacture removes all inelastic stretch that might otherwise occur on the job. You get all power for your V-belt costs when you invest in a set of Condor V-Belts.

Heavy duty covers are weather-proof protection against rain and hot sun—preventing shrinkage or deterioration. Rugged sidewall construction gives each belt a positive grip for maximum power.

Condor's 8 Points of Balance

1—Wide margin of strength
2—Minimum inelastic stretch
3—Uniform flexibility
4—Maximum resistance to structural breakdown
5—Smooth running
6—Maximum traction
7—Highest resistance to side wear
8—Correct lateral reinforcement

List Prices—Standard Industrial Sizes

Dimensions indicated below are "width and thickness."

"A" Section

½x11/32 in.

Belt Nos.	Each	Pitch lgth., in.	Apx. wt., lbs.
A-26	$1.30	27.0	.18
A-31	1.40	32.0	.21
A-33	1.45	34.0	.23
A-35	1.50	36.0	.24
A-38	1.60	39.0	.26
A-42	1.70	43.0	.28
A-46	1.80	47.0	.31
A-48	1.85	49.0	.33
A-51	1.90	52.0	.35
A-53	1.95	54.0	.36
A-55	2.00	56.0	.38
A-60	2.20	61.0	.41
A-62	2.15	63.0	.42
A-64	2.20	65.0	.44
A-66	2.25	67.0	.45
A-68	2.30	69.0	.46
A-71	2.40	72.0	.48
A-75	2.50	76.0	.50
A-78	2.60	79.0	.51
A-80	2.70	81.0	.53
A-85	2.90	86.0	.58
A-90	3.10	91.0	.61
A-96	3.30	97.0	.65
A-105	3.60	106.0	.71
A-112	4.00	113.0	.76
A-120	4.30	121.0	.82
A-128	4.60	129.0	.87

"B" Section

21/32x7/16 in.

Belt Nos.	Each	Pitch lgth., in.	Apx. wt., lbs.
B-35	$ 2.00	36.5	.38
B-38	2.20	39.5	.41
B-42	2.40	43.5	.45
B-46	2.60	47.5	.50
B-48	2.70	49.5	.52
B-51	2.80	52.5	.56
B-53	2.85	54.5	.57
B-55	2.90	56.5	.60
B-60	3.00	61.5	.65
B-62	3.10	63.5	.67
B-64	3.15	65.5	.69
B-65	3.20	66.5	.70
B-66	3.25	67.5	.71
B-68	3.30	69.5	.73
B-71	3.45	72.5	.77
B-75	3.60	76.5	.81
B-78	3.75	79.5	.84
B-81	3.90	82.5	.87
B-83	4.05	84.5	.89
B-85	4.10	86.5	.92
B-90	4.30	91.5	.97
B-93	4.50	94.5	1.00
B-97	4.70	98.5	1.05
B-100	4.80	101.5	1.08
B-103	4.90	104.5	1.11
B-105	5.00	106.5	1.13
B-112	5.40	113.5	1.21
B-120	5.70	121.5	1.29
B-128	6.10	129.5	1.38
B-144	6.90	145.5	1.55
B-158	7.50	159.5	1.70
B-173	8.20	174.5	1.87
B-180	8.60	181.5	1.94
B-195	9.30	196.5	2.11
B-210	10.00	211.5	2.27
B-240	11.30	240.0	2.59
B-270	12.80	270.0	2.92
B-300	14.20	300.0	3.24

"C" Section

⅞x17/32 in.

Belt Nos.	Each	Pitch lgth., in.	Apx. wt., lbs.
C-51	$ 4.60	53.0	.97
C-60	5.40	62.0	1.15
C-68	6.10	70.0	1.30
C-75	6.70	77.0	1.43
C-81	7.30	83.0	1.55
C-85	7.50	87.0	1.62
C-90	8.10	92.0	1.72
C-96	8.60	98.0	1.83
C-105	9.40	107.0	2.00
C-112	10.00	114.0	2.14
C-120	10.70	122.0	2.29
C-128	11.40	130.0	2.44
C-144	12.80	146.0	2.75
C-158	14.00	160.0	3.02
C-162	14.30	164.0	3.09
C-173	15.30	175.0	3.30
C-180	16.00	182.0	3.44
C-195	17.30	197.0	3.72
C-210	18.70	212.0	4.00
C-240	21.00	240.0	4.58
C-270	23.70	270.0	5.16
C-300	26.30	300.0	5.73
C-330	28.90	330.0	6.30
C-360	31.50	360.0	6.87

"D" Section

1¼x¾ in.

Belt Nos.	Each	Pitch lgth., in.	Apx. wt., lbs.
D-120	$19.80	122.5	3.83
D-128	21.10	130.5	4.08
D-144	23.70	146.5	4.59
D-158	26.00	160.5	5.04
D-162	26.80	164.5	5.17
D-173	28.40	175.5	5.52
D-180	29.50	182.5	5.74
D-195	32.00	197.5	6.22
D-210	34.50	212.5	6.70
D-240	38.80	240.0	7.66
D-270	43.70	270.0	8.61
D-300	48.50	300.0	9.57
D-330	53.40	330.0	10.53
D-360	58.20	360.0	11.48

"E" Section

1½x1 in.

Belt Nos.	Each	Pitch lgth., in.	Apx. wt., lbs.
E-180	$42.50	183.5	9.25
E-195	46.00	198.5	10.00
E-210	49.60	213.5	10.79
E-240	55.70	240.0	12.34
E-270	62.60	270.0	13.88
E-300	69.60	300.0	15.42
E-330	76.60	330.0	16.96
E-360	83.50	360.0	18.50

Lengths longer than 360 inches may be supplied in D and E Sections only, in increments of 60 inches.

For each increment of 60 inches add to List Prices for the 360 belt.

D Section—$10.00 per 60-inch increment.
E Section—$15.00 per 60-inch increment.

Necessary Data For Ordering V-Belt Drives

Type of equipment to be driven (grinder, compressor, etc.).
Type of power used (electric motor, Diesel engine, gasoline engine, etc.).
Maximum outside diameter of driver sheave that can be used.
Minimum outside diameter of driven sheave that can be used.
Speed or RPM of motor or driving shaft (actual load speed).
Diameter of shaft and size of keyway on motor or driving shaft.
Speed or RPM of driven shaft.
Diameter of shaft and size of keyway on driven shaft.
HP rating of motor or engine to be used.
Actual maximum HP required by driven unit (if available).
Shaft centers: Maximum shaft center distance that can be used; minimum shaft center distance that can be used; preferred distance between shaft centers.
Send sketch of drive.

Non-Standard Sizes

Non-standard sizes in certain dimensions can be furnished only for replacement. Prices on request.

COMPARISON TABLE—V-BELT SYMBOL NUMBERS

A Section—Width ½ in., Thickness 11/32 in.

Manhattan Condor	Pitch length, in.	Allis-Chalmers		Browning Grip-belts	Dayton Thoro-bred	Dayton Cog	Dodge	Gates	Gilmer	Goodrich	Goodyear		Rockwood	Thermoid	U. S. Rubber
		Present	Former								Present	Former			
A26	27.0	A26	10A	A26	A26	2A8	A26	26A	2A6	A26	A26	0270	A26-91026	A26	A26
A31	32.0	A31	10B	A31	A31	3A3	A31	31A	3A1	A31	A31	0320	A31-91031	A31	A31
A33	34.0	A33	...	A33	A33	3A5	...	33A	3A3	A33	A33	....	A33-91033	...	A33
A35	36.0	A35	10	A35	A35	3A7	A35	35A	3A5	A35	A35	0360	A35-91035	A35	A35
A38	39.0	A38	20B	A38	A38	4A0	A38	38A	3A8	A38	A38	0390	A38-91038	A38	A38
A42	43.0	A42	20	A42	A42	4A4	A42	42A	4A2	A42	A42	0430	A42-91042	A42	A42
A46	47.0	A46	30A	A46	A46	4A9	A46	46A	4A6	A46	A46	0470	A46-91046	A46	A46
A48	49.0	A48	...	A48	A48	...	...	48A	4A8	A48	A48	....	A48-91048	...	A48
A51	52.0	A51	30	A51	A51	5A4	A51	51A	5A1	A51	A51	0520	A51-91051	A51	A51
A53	54.0	A53	...	A53	A53	...	...	53A	5A3	A53	A53	....	A53-91053	...	A53
A55	56.0	A55	...	A55	A55	...	...	55A	5A5	A55	A55	....	A55-91055	...	A55
A60	61.0	A60	40	A60	A60	6A3	A60	60A	6A0	A60	A60	0610	A60-91060	A60	A60
A62	63.0	A62	...	A62	A62	...	...	62A	6A2	A62	A62	....	A62-91062	...	A62
A64	65.0	A64	...	A64	A64	6A7	...	64A	6A4	A64	A64	....	A64-91064	...	A64
A66	67.0	A66	...	A66	A66	...	...	66A	6A6	A66	A66	....	A66-91066	...	A66
A68	69.0	A68	...	A68	A68	7A1	A68	68A	6A8	A68	A68	0690	A68-91068	A68	A68
A71	72.0	A71	...	A71	A71	...	...	71A	7A1	A71	A71	....	A71-91071	...	A71
A75	76.0	A75	50	A75	A75	7A8	A75	75A	7A5	A75	A75	0760	A75-91075	A75	A75
A78	79.0	A78	...	A78	A78	...	...	78A	7A8	A78	A78	....	A78-91078	...	A78
A80	81.0	A80	50A	A80	A80	8A3	A80	80A	8A0	A80	A80	0810	A80-91080	A80	A80
A85	86.0	A85	50B	A85	A85	8A8	A85	85A	8A5	A85	A85	0860	A85-91085	A85	A85
A90	91.0	A90	60	A90	A90	9A3	A90	90A	9A0	A90	A90	0910	A90-91090	A90	A90
A96	97.0	A96	60A	A96	A96	9A9	A96	96A	9A6	A96	A96	0970	A96-91096	A96	A96
A105	106.0	A105	70	A105	A105	1A08	A105	105A	1A05	A105	A105	01060	A105-91105	A105	A105
A112	113.0	A112	70A	A112	A112	1A15	A112	112A	1A12	A112	A112	01130	A112-81112	A112	A112
A120	121.0	A120	80	A120	A120	1A23	A120	120A	1A20	A120	A120	01210	A120-91120	A120	A120
A128	129.0	A128	80A	A128	A128	1A31	A128	128A	1A28	A128	A128	01290	A128-91128	A128	A128

(Continued on Next Page)

V-BELTS

CONDOR, FOR MULTIPLE GROOVE SERVICE

COMPARISON TABLE—V-BELT SYMBOL NUMBERS (Continued)

Manhattan Condor	Pitch length, in.	Allis-Chalmers		Browning Grip-belts	Dayton Thoro-bred	Dayton Cog	Dodge	Gates	Gilmer	Goodrich	Goodyear		Rockwood	Thermoid	U. S. Rubber
		Present	Former								Present	Former			
B-Section—Width 21/32 in., Thickness 7/16 in.															
B35	36.5	B35	11	B35	B35	3B7	B35	35B	3B5	B35	B35	1364	B35-92035	B35	B35
B38	39.5	B38	11A	B38	B38	4B0	B38	38B	3B8	B38	B38	1394	B38-92038	B38	B38
B42	43.5	B42	21	B42	B42	4B4	B42	42B	4B2	B42	B42	1434	B42-92042	B42	B42
B46	47.5	B46	21A	B46	B46	4B9	B46	46B	4B6	B46	B46	1474	B46-92046	B46	B46
B48	49.5	B48	...	B48	B48	5B1	...	48B	4B8	B48	B48	....	B48-92048	...	B48
B51	52.5	B51	31	B51	B51	5B4	B51	51B	5B1	B51	B51	1524	B51-92051	B51	B51
B53	54.5	B53	...	B53	B53	5B6	...	53B	5B3	B53	B53	....	B53-92053	...	B53
B55	56.5	B55	31A	B55	B55	5B8	B55	55B	5B5	B55	B55	1564	B55-92055	...	B55
B60	61.5	B60	41	B60	B60	6B3	B60	60B	6B0	B60	B60	1614	B60-92060	B60	B60
B62	63.5	B62	...	B62	B62	6B5	...	62B	6B2	B62	B62	....	B62-92062	...	B62
B64	65.5	B64	...	B64	B64	6B7	...	64B	6B4	B64	B64	....	B64-92064	...	B64
B65	66.5	B65	...	B65	...	...	...	65B	6B5	B65	B65	1664	....	B65	B65
B66	67.5	B66	...	B66	B66	6B9	...	66B	6B6	B66	B66	....	B66-92066	...	B66
B68	69.5	B68	41A	B68	B68	7B1	B68	68B	6B8	B68	B68	1694	B68-92068	B68	B68
B71	72.5	B71	...	B71	B71	...	...	71B	7B1	B71	B71	....	B71-92071	...	B71
B75	76.5	B75	51	B75	B75	7B8	B75	75B	7B5	B75	B75	1764	B75-92075	B75	B75
B78	79.5	B78	...	B78	B78	...	...	78B	7B8	B78	B78	....	B78-92078	...	B78
B81	82.5	B81	51C	B81	B81	8B4	B91	81B	8B1	B81	B81	1824	B81-92081	B81	B81
B83	84.5	B83	...	B83	B83	8B6	...	83B	...	...	B83	....	B83-92083	...	B83
B85	86.5	B85	51A	B85	B85	8B8	B85	85B	8B5	B85	B85	1864	B85-92085	B85	B85
B90	91.5	B90	61	B90	B90	9B3	B90	90B	9B0	B90	B90	1914	B90-92090	B90	B90
B93	94.5	B93	...	B93	...	...	...	93B	9B3	B93	B93	1944	....	B93	B93
B97	98.5	B97	61A	B97	B97	9B9	B97	97B	9B7	B97	B97	1989	B97-92097	B97	B97
B100	101.5	B100	...	B100	...	...	...	100B	1B00	B100	B100	11014	....	B100	B100
B103	104.5	B103	...	B103	...	...	...	103B	1B03	B103	B103	11044	....	B103	B103
B105	106.5	B105	71	B105	B105	1B08	B105	105B	1B05	B105	B105	11064	B105-92105	B105	B105
B112	113.5	B112	71A	B112	B112	1B15	B112	112B	1B12	B112	B112	11139	B112-92112	B112	B112
B120	121.5	B120	81	B120	B120	1B23	B120	120B	1B20	B120	B120	11214	B120-92120	B120	B120
B128	129.5	B128	81A	B128	B128	1B31	B128	128B	1B28	B128	B128	11294	B128-92128	B128	B128
B144	145.5	B144	91	B144	B144	1B47	B144	144B	1B44	B144	B144	11454	B144-92144	B144	B144
B158	159.5	B158	91A	B158	B158	1B61	B158	158B	1B58	B158	B158	11594	B158-92158	B158	B158
B173	174.5	B173	91B	B173	B173	1B76	B173	173B	1B73	B173	B173	11744	B173-92173	B173	B173
B180	181.5	B180	101	B180	B180	1B84	B180	180B	1B80	B180	B190	11814	B180-92180	B180	B180
B195	196.5	B195	101B	B195	B195	1B99	B195	195B	1B95	B195	B195	11964	B195-92195	B195	B195
B210	211.5	B210	101A	B210	B210	2B14	B210	210B	2B08	B210	B210	12114	B210-92210	B210	B210
B240	240.0	B240	111	B240	B240	2B44	B240	240B	2B38	B240	B240	12400	B240-92240	B240	B240
B270	270.0	B270	111A	B270	B270	2B74	B270	270B	2B68	B270	B270	12700	B270-92270	B270	B270
B300	300.0	B300	121	B300	B300	3B04	B300	300B	2B98	B300	B300	13000	B300-92300	B300	B300
C-Section—Width ⅞ in., Thickness 17/32 in.															
C51	53.0	C51	32	C51	C51	5C4	C51	51C	5C1	C51	C51	2530	C51-93051	C51	C51
C60	62.0	C60	42	C60	C60	6C3	C60	60C	6C0	C60	C60	2620	C60-93060	C60	C60
C68	70.0	C68	42A	C68	C68	7C1	C68	68C	6C8	C68	C68	2700	C68-93068	C68	C68
C75	77.0	C75	52	C75	C75	7C8	C75	75C	7C5	C75	C75	2770	C75-93075	C75	C75
C81	83.0	C81	52A	C81	C81	8C4	C81	81C	8C1	C81	C81	2830	C81-93081	C81	C81
C85	87.0	C85	52B	C85	C85	8C8	C85	85C	8C5	C85	C85	2860	C85-93085	C85	C85
C90	92.0	C90	62	C90	C90	9C3	C90	90C	9C0	C90	C90	2920	C90-93090	C90	C90
C96	98.0	C96	62A	C96	C96	9C9	C96	96C	9C6	C96	C96	2980	C96-93096	C96	C96
C105	107.0	C105	72	C105	C105	1C08	C105	105C	1C05	C105	C105	21070	C105-93105	C105	C105
C112	114.0	C112	72A	C112	C112	1C15	C112	112C	1C12	C112	C112	21140	C112-93112	C112	C112
C120	122.0	C120	82	C120	C120	1C23	C120	120C	1C20	C120	C120	21220	C120-93120	C120	C120
C128	130.0	C128	82A	C128	C128	1C31	C128	128C	1C28	C128	C128	21300	C128-93128	C128	C128
C144	146.0	C144	92	C144	C144	1C47	C144	144C	1C44	C144	C144	21460	C144-93144	C144	C144
C158	160.0	C158	92C	C158	C158	1C61	C158	158C	1C58	C158	C158	21600	C158-93158	C158	C158
C162	164.0	C162	92A	C162	C162	1C65	C162	162C	1C62	C162	C162	21640	C162-93162	C162	C162
C173	175.0	C173	92B	C173	C173	1C76	C173	173C	1C73	C173	C173	21750	C173-93173	C173	C173
C180	182.0	C180	102	C180	C180	1C84	C180	180C	1C80	C180	C180	21820	C180-93180	C180	C180
C195	197.0	C195	102B	C195	C195	1C99	C195	195C	1C95	C195	C195	21970	C195-93195	C195	C195
C210	212.0	C210	102A	C210	C210	2C14	C210	210C	2C08	C210	C210	22130	C210-93210	C210	C210
C240	240.0	C240	112	C240	C240	2C44	C240	240C	2C38	C240	C240	22400	C240-93240	C240	C240
C270	270.0	C270	112A	C270	C270	2C74	C270	270C	2C68	C270	C270	22700	C270-93270	C270	C270
C300	300.0	C300	122	C300	C300	3C04	C300	300C	2C98	C300	C300	23000	C300-93300	C300	C300
C330	330.0	C330	122B	C330	C330	3C34	C330	330C	3C28	C330	C330	23300	C330-93330	C330	C330
C360	360.0	C360	133	C360	C360	3C64	C360	360C	3C58	C360	C360	23600	C360-93360	C360	C360
D-Section—Width 1¼ in., Thickness ¾ in.															
D120	122.5	D120	83	D120	D120	1D23	D120	120D	1D20	D120	D120	31224	D120-94120	D120	D120
D128	130.5	D128	83A	D128	D128	1D31	D128	128D	1D28	D128	D128	31304	D128-94128	D128	D128
D144	146.5	D144	93	D144	D144	1D47	D144	144D	1D44	D144	D144	31464	D144-94144	D144	D144
D158	160.5	D158	93B	D158	D158	1D61	D158	158D	1D58	D158	D158	31604	D158-94158	D158	D158
D162	164.5	D162	93A	D162	D162	1D65	D162	162D	1D62	D162	D162	31644	D162-94162	D162	D162
D173	175.5	D173	93C	D173	D173	1D76	D173	173D	1D73	D173	D173	31754	D173-94173	D173	D173
D180	182.5	D180	103	D180	D180	1D84	D180	180D	1D80	D180	D180	31824	D180-94180	D180	D180
D195	197.5	D195	103B	D195	D195	1D99	D195	195D	1D95	D195	D195	31976	D195-94195	D195	D195
D210	212.5	D210	103A	D210	D210	2D14	D210	210D	2D08	D210	D210	32131	D210-94210	D210	D210
D240	240.0	D240	113	D240	D240	2D44	D240	240D	2D38	D240	D240	32400	D240-94240	D240	D240
D270	270.0	D270	113A	D270	D270	2D74	D270	270D	2D68	D270	D270	32700	D270-94270	D270	D270
D300	300.0	D300	123	D300	D300	3D04	D300	300D	2D98	D300	D300	33000	D300-94300	D300	D300
D330	330.0	D330	123B	D330	D330	3D34	D330	330D	3D28	D330	D330	33300	D330-94330	D330	D330
D360	360.0	D360	133	D360	D360	3D64	D360	360D	3D58	D360	D360	33600	D360-94360	D360	D360
E-Section—Width 1½ in., Thickness 1 in.															
E180	183.5	E180	104	E180	E180	1E84	E180	180E	1E80	E180	E180	41831	E180-95180	E180	E180
E195	198.5	E195	104B	E195	E195	1E99	E195	195E	1E95	E195	E195	41985	E195-95195	E195	E195
E210	213.5	E210	104A	E210	E210	2E14	E210	210E	2E08	E210	E210	42136	E210-95210	E210	E210
E240	240.0	E240	114	E240	E240	2E44	E240	240E	2E38	E240	E240	42400	E240-95240	E240	E240
E270	270.0	E270	114A	E270	E270	2E74	E270	270E	2E68	E270	E270	42700	E270-95270	E270	E270
E300	300.0	E300	124	E300	E300	3E04	E300	300E	2E98	E300	E300	43000	E300-95300	E300	E300
E330	330.0	E330	124B	E330	E330	3E34	E330	330E	3E28	E330	E330	43300	E330-95330	E330	E330
E360	360.0	E360	134	E360	E360	3E64	E360	360E	3E58	E360	E360	43600	E360-96360	E360	E360

PARANITE-G.O.P. (GAS-OIL-PROOF) NON-SPARK V-BELTS

Paranite—G.O.P. Non-Spark V-Belts are manufactured on the same scientific principle as Condor V-Belts, except that Manhattan's exclusive G.O.P. (Gas-Oil-Proof) synthetic rubber is used throughout in place of natural rubber.

These belts are particularly desirable for service where they come in contact with oil or where there is danger of fire, explosions or other hazards resulting from static. Their non-spark qualities make them ideal for use wherever there is danger of combustion caused by static electricity generated by belt friction.

Prices on Request

FHP V-BELTS

We can furnish all sizes required for replacement service on:

Pumps—Stokers—Oil Burners, Etc.—Complete Information and Prices on Request

GENERAL BELTING INFORMATION

HORSEPOWER RATING OF CONDOR COMPENSATED BELT

Horsepower Per Inch of Width at 180° Arc of Contact

Ply	Smaller Pulley Dia., In.	Belt Speed, FPM 1000	1500	2000	2500	3000	4000	5000	6000
3	2	.6	.7	.8	1.0	1.4	....	....	....
	3	.7	1.0	1.4	1.6	1.6	2.3	....	....
	4	1.0	1.2	1.8	2.0	2.5	3.0	3.2	3.2
	6	1.2	1.5	2.0	2.2	2.8	3.4	4.0	4.0
	8 and over	1.3	1.6	2.2	2.5	3.2	3.8	4.2	4.2
4	3	.7	1.1	1.3	1.6	1.8	....	....	....
	4	1.0	1.4	1.8	2.0	2.6	3.0	....	....
	6	1.3	2.0	2.5	3.0	3.6	4.3	4.8	5.0
	8	1.7	2.5	3.2	3.8	4.5	5.4	6.0	6.3
	10	1.9	2.7	3.5	4.2	5.0	6.0	6.7	7.0
	12 and over	2.0	3.0	4.0	4.6	5.5	6.6	7.4	7.7
5	5	.9	1.3	1.7	2.1	2.4	....	....	....
	6	1.1	1.6	2.1	2.6	3.0	3.6	....	....
	8	1.6	1.8	3.0	3.7	4.3	5.2	5.8	6.0
	10	2.0	3.0	3.8	4.6	5.4	6.5	7.2	7.6
	12	2.2	3.2	4.2	5.0	6.0	7.2	8.0	8.4
	18 and over	2.6	3.8	5.0	6.0	7.2	8.6	9.6	10.0
6	8	1.3	2.0	2.5	3.0	3.5	....	....	....
	10	1.8	2.7	3.5	4.3	5.0	5.6	....	....
	12	2.3	3.4	4.4	5.4	6.3	7.6	8.4	....
	14	2.6	3.8	5.0	6.0	7.0	8.4	9.3	9.8
	18	2.8	4.0	5.4	6.6	7.7	9.2	10.3	10.8
	24 and over	3.1	4.5	6.0	7.2	8.5	10.2	11.3	12.0

For economical and efficient operation, do not use pulleys smaller than sizes shown below the staggered lines.

Note—Interpolate for intermediate speeds and pulley diameters.

These horsepower ratings may be raised 10% if a factory made endless belt or a vulcanized splice is used.

CORRECTION FACTOR FOR ARC OF CONTACT

Arc of contact, degree	Factor	Arc of contact, degree	Factor	Arc of contact, degree	Factor	Arc of contact, degree	Factor
110	.69	150	.88	190	1.03	230	1.17
120	.74	160	.92	200	1.07	240	1.20
130	.79	170	.96	210	1.11	250	1.23
140	.83	180	1.00	220	1.14	260	1.26

PULLEY DIAMETERS AND REVOLUTIONS

1—To Find RPM of Driven Pulley
Diameter and RPM of driver and diameter of driven known:

Formula →
$$\frac{\text{Diameter of driver} \times \text{RPM}}{\text{Diameter of driven}}$$

2—To Find RPM of Driver Pulley
Diameter and RPM of driven and diameter of driver known:

Formula →
$$\frac{\text{Diameter of driven} \times \text{RPM}}{\text{Diameter of driver}}$$

3—To Find Diameter of Driver Pulley
RPM of driver and diameter and RPM of driven known:

Formula →
$$\frac{\text{Diameter of driven} \times \text{RPM}}{\text{RPM of driver}}$$

4—To Find Diameter of Driven Pulley
RPM of driven and diameter and RPM of driver known:

Formula →
$$\frac{\text{Diameter of driver} \times \text{RPM}}{\text{RPM of driven}}$$

LENGTH OF BELT

1—Open Drive:

$$\text{Length} = 2C + 1.57\,(D + d) + \frac{(D-d)^2}{4C}$$

2—Crossed Drive:

$$\text{Length} = 2C + 1.57\,(D+d) + \frac{(D + d)^2}{4C}$$

HOW TO ORDER ENDLESS BELTS

In ordering endless belts there should be given the tapeline measurement around the pulleys when they are closest together, also inches of available belt takeup when in that position.

Another form of furnishing the same information is to give the pulley diameters and the center to center distance when pulleys are closest together, also when farthest apart. When the take-up is made by means of an idler pulley, the two tape-line dimensions around pulleys should be given, that is, with the idler disengaged and with the idler at its position of maxmium take-up.

In all cases it is important to furnish two dimensions, that is, the maximum and minimum belt lengths. This enables the manufacturer to make an endless belt of the proper length, so that it can be applied without injurious effect and will not stretch beyond the available takeup during its life. The purchaser should give only the measurements described and should not make allowances for stretch or shrinkage; this will be taken care of by the manufacturer.

AVERAGE NET WEIGHTS OF RUBBER TRANSMISSION BELTING

Size inches	No. of plies 3	4	5	6	7	8	9	10	11
	Weight per 100 feet, lbs.								
2	17	21	..	..	..	...	...	...	...
3	26	32	38	..	..	...	...	...	...
4	35	42	50	59	67	...	...	...	...
5	42	53	63	73	84	...	...	...	...
6	52	63	75	88	100	113	...	...	...
7	..	74	88	103	117	132	...	...	...
8	..	84	100	117	134	151	168	...	...
9	..	95	113	132	150	170	189	...	...
10	..	105	126	147	167	188	210	231	...
12	..	126	151	176	201	226	252	277	302
14	..	...	176	205	234	264	294	323	353

APPROXIMATE NET WEIGHTS OF CONVEYOR AND BUCKET ELEVATOR BELTS

Weight Per Square Foot in Pounds

Conveyor Belts

Homocord, Style EH	2.5
Homocord, Style IH	3.5

	5-Ply Carcass 28 oz.	32 oz.	36 oz.	42 oz.	Covers for each $\frac{1}{32}$ in.
Super Master	1.39	1.45	1.64	1.83	.204
Master Homoflex	1.39	1.45	....	....	.218
Delhi	1.25	1.36	....	....	.248

Bucket Elevator Belts

	6-Ply Carcass		Covers for each $\frac{1}{32}$ in.
Grenedier	35 oz.	2.28 lbs.	.204
Dreadnaught	35 oz.	1.96 lbs.	.218
Dreadnaught	32 oz.	1.73 lbs.	.218
Delhi	32 oz.	1.63 lbs.	.248

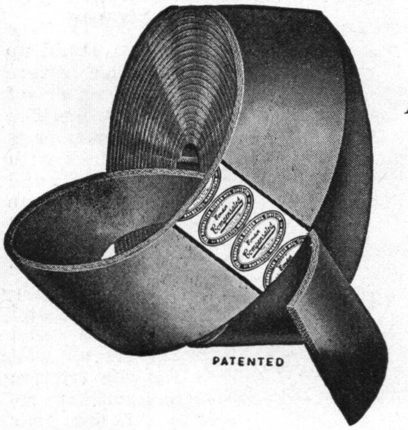
Other sizes and plies in direct proportion.

Actual weights may vary. However, figures shown will be useful for estimating shipping costs.

RUBBER TRANSMISSION BELTING

CONDOR COMPENSATED, RAW EDGE

Style H—Hycoe Pulley Surface



The Low-Tension Rubber Belt with Equalized Ply Stresses

Advantages—

1—Ruptures in outside ply practically eliminated.
2—Ply separation practically eliminated.
3—Longer fastener life.
4—Can be operated on smaller pulleys.
5—For heavy loads, plies may be increased with same pulleys.
6—Higher overload capacity or margin of safety.
7—Less wear on pulley side.
8—High efficiency.
9—Material reduction in belting costs.

In the general procedure of manufacturing rubber belting, each duck ply is laid up on a flat table. Power stresses would thus be equal only on the straight-away pull. However, the strains and nearly all fatigue come when the belt is flexed around the pulley under high tension.

Condor Compensated Belt is so constructed that the stresses developed at the arc of contact are equally borne by all the plies. The plies are impregnated with rubber covering every fibre and are welded into a homogeneous body, producing a flexible, long life belt. Has a special pulley surface with high pulley adhesion permitting it to be run at low tension.

Where there is considerable dust, Condor Compensated Belt may be effectively dressed as, due to its construction, it responds properly to belt dressing without injurious effects to the belt. We recommend "Cling Surface" belt dressing. Condor Compensated Belt may be used on drives equipped with idlers.

Made in a full range of widths and plies. Factory made endless on special order.

KORTLANDT AGRICULTURAL GRADE

Red Friction Surface—Folded Edge

Designed for rough work, especially out-of-doors or in open sheds, as in agricultural service. It requires no special attention; holds fasteners well; will not glaze, shrink, stretch or lose its flexibility. Has a uniform and balanced construction; operates economically on all drives. In the process of manufacture all appreciable stretch is removed. Constructed of plies of strong duck, held in an inseparable homogeneous unit by tenacious long-aging rubber. May be installed and operated immediately without a breaking-in period.

Available in a wide range of widths and plies. Factory made endless on special order.

OFFICIAL RUBBER BELT LIST

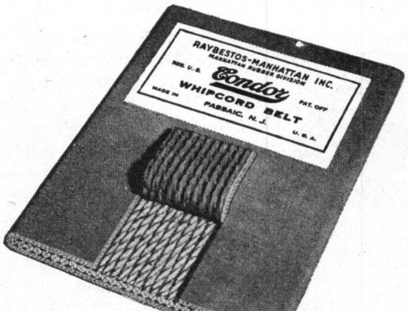
Standard List Per Foot

Width,	No. of Plies								
in.	2	3	4	5	6	7	8	9	10
1	$0.18	$0.20	$0.24	$....	$....	$....	$....	$....	$....
1½	.27	.31	.36	.45	....	....	....	....	....
2	.34	.39	.46	.58	.69	....	....	....	....
2½	.42	.48	.56	.70	.84	....	....	....	....
3	.48	.55	.65	.81	.98	....	....	....	....
3½	.57	.65	.76	.95	1.14	....	....	....	....
4	.61	.70	.82	1.03	1.23	1.44	....	....	....
5	.76	.87	1.02	1.28	1.53	1.79	....	....	....
6	.91	1.04	1.22	1.53	1.83	2.14	2.44	2.75	3.06
7	1.07	1.22	1.43	1.79	2.15	2.50	2.86	3.22	3.58
8	1.15	1.31	1.54	1.93	2.31	2.70	3.08	3.47	3.86
10	1.43	1.63	1.92	2.40	2.88	3.36	3.84	4.32	4.80
12	1.72	1.96	2.30	2.88	3.45	4.03	4.60	5.18	5.76
14	2.00	2.29	2.69	3.36	4.04	4.71	5.38	6.05	6.72

Note—Where rubber belts are to be made endless, it is necessary to add to the price of belts under 10 in. wide, the cost of 15 feet for the splice; to the price of belts 10 in. wide and over the cost of 10 feet for the splice. Shipments must be made from factory.

RUBBER TRANSMISSION BELTING

CONDOR WHIPCORD ENDLESS



Stretchless Cord Construction, Patented Extensible Tip

Advantages—

1—Low inelastic stretch.
2—Length not variable with atmospheric changes.
3—High degree of bending flexibility.
4—No ply separation.
5—No splice in tension or load-carrying section.
6—Unequalled longevity.
7—Patented extensible tip prevents seam separation.

Condor Whipcord Endless Belt is recommended for all types of endless drives. It may be used to advantage whether centers are short or long, and long special take-up facilities are not necessary. It will give long and efficient service on all types of pulleys operated at any speed.

Condor Whipcord Belt out-performs other types of belting because of its high tensile strength and extreme flexibility. Furthermore there is no splice in the center or tension section to pull apart. The pulley side of the belt has two or more plies, depending upon the style to resist wear.

Condor Whipcord Belt is unequalled in flexibility. The endless-wound whipcord section placed in the neutral axis area of the belt, flexes naturally and has great strength. This tension area is bonded in a matrix of heat-dissipating rubber and is completely surrounded with a flexible wear-resisting duck cover, and vulcanized under pressure into an inseparable unit. The cover is made endless with the patented Extensible Tip splice with rubber rivets which definitely prevents opening of the seam. This construction makes Condor Whipcord an ideal belt for service where it must continually flex over small pulleys. Separation of its component parts cannot take place.

Condor Whipcord Belt is not seriously affected by atmospheric conditions. The cords in the whipcord section or tension member are pretreated by a special process previous to manufacture. This process reduces inelastic stretch to a minimum.

Styles

Style No. 3—A light weight belt especially designed for small pulleys, light loads and high speeds. Width limits 1 to 6 in.

Style No. 4—A medium weight belt designed for larger pulleys and heavier loads than for Style No. 3. Width limits 1½ to 10 in.

Style No. 56—A general purpose belt which can be used in almost any type of industrial service, including top and bottom cylinder drives on planers. Width limits 2 to 28 in.

Style No. 56-S—A special belt designed primarily for side head drives on planers. Width limits 2 to 28 in.

Style No. 78—A heavy belt designed for heavy loads. Width limits 8 to 32 in.

Style No. 910—An extra heavy belt designed for heaviest loads. Width limits 8 to 42 in.

Prices on Request

MANHATTAN ENDLESS HAMMERMILL

Friction Surface

Manhattan Endless Hammer Mill Belts are constructed to efficiently transmit power from tractors to hammer mills, roughage mills, feed grinders, corn shellers, or other similar farm equipment where high speeds and small pulleys necessitate a belt of superior quality.

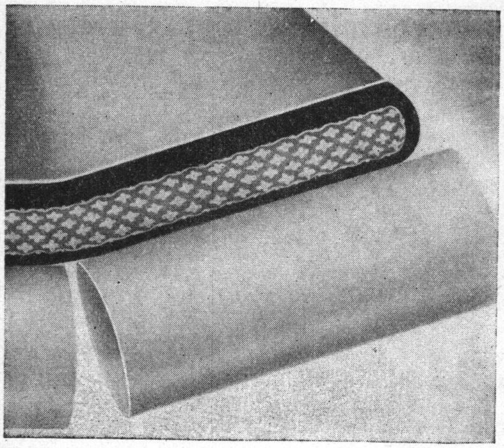
It is a square edge belt of extreme flexibility, the cover of which is made endless with Manhattan's patented Extensible Tip Method, which definitely prevents opening at the seams and prolongs belt life. After the belts have been vulcanized the edges are treated with a waterproof preparation for protection against moisture.

Available in 4 to 10 in. widths, in 4 and 5 plies, and in 40 to 160 ft. endless lengths.

Prices on Request

RUBBER CONVEYOR BELTING

HOMOCORD



Meets Every Demand of Conveyor Belt Service

Correct proportioning of lengthwise and crosswise strength and flexibility, low in elastic stretch, resistance to fatigue and impact, equal life in body and cover.

Longitudinal Homocords are grouped to form a tension or strength member of great strength and pliability. The heavy cross or filler Homocords are in such proportion as to hold the body firmly together and to afford ample strength for fasteners. These body components are carried in a heavy impregnation of rubber.

The top rubber cover may be of any desired thickness and has a strong adhesion to this type of body. Bottom cover is usually $\frac{1}{32}$ in. but is made $\frac{1}{16}$ in. thick where back cover wear is excessive.

Moisture cannot enter the belt and mildew cannot start; the belt is mildew-proofed throughout.

Available in several styles for a variety of conveyor service. When heat is present, heat-resisting "Hot Ore" compounds are used in friction and cover.

MASTER HOMO-FLEX

Extremely Flexible, Troughs Naturally

The body is composed of a fabric that resembles cord duck, to which has been added filler or cross Homo-Flex cords amply sufficient to hold fasteners. The fabric has a specially developed open weave and the rubber bonding material goes completely through it, thoroughly impregnating it and embedding it in a matrix of rubber.

Rubber covers have the highest abrasion-resisting qualities. For the conveying of hot material a special "Hot Ore" cover will be furnished when specified.

Master Homo-flex conveyor belts are recommended for hard service but show high ultimate economy in less severe and ordinary service. Whether it is a long or short haul, high or low lift, heavy, light, dry or wet material, in hot or cold state, Manhattan assumes responsibility for the economical and efficient handling of materials with a Homo-Flex Conveyor Belt if the operating conditions are first given.

SUPER-MASTER

28, 32, 36 or 42 oz. Duck

An extra heavy duty belt for exceptionally severe service, made to withstand the most unusual abuse. Recommended for carrying heavy abrasive ore or rock in large lumps and in great tonnage; also on hot coke wharves.

DELHI

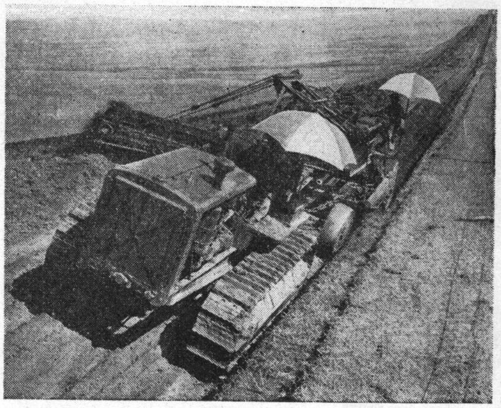
28 or 32 oz. Duck

Recommended for general service of average severity, where the materials carried are moderately abrasive and operating conditions are not too severe. A reliable belt and one of high ultimate economy in the handling of bituminous coal, either run-of-mine, crushed or pulverized, rock or ore crushed up to 2 in. size, sand, small gravels, lime, wood chips, soil, sugar, sugar beets, pulp, packages and boxes.

Prices on Request

RUBBER GRADER BELTING

MANHATTAN



Compensated Ply Stresses

Built to stand up under the severe conditions of Grader service. The strength member is a special duck with high filler and warp strength to resist puncture and hold fasteners.

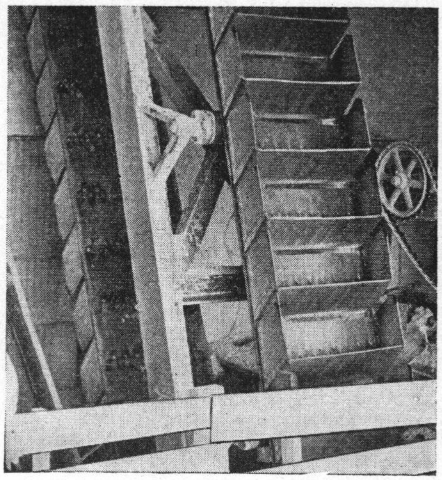
Rubber with the qualities of toughness, flexibility and elasticity is used for covers as well as for the friction compounds. It resists abrasion, tear and exposure and is inseparable from the strength member. Top cover is usually $\frac{1}{32}$, $\frac{3}{32}$ or ⅛ in. thick. Minimum thickness of top cover when breaker strip is used is $\frac{3}{32}$ in. including breaker strip. Back cover is $\frac{1}{32}$ in.

All belts given a special mildew-proof treatment.

Prices on Request

BUCKET ELEVATOR BELTS

GRENADIER



35 oz. Duck

Intended primarily for wet conditions and extremely severe service. Economical for the handling of wet ores, concentrates and tailings, wet gravels, etc. in large quantities.

It is made of heavy, powerful 35 oz. silver hard duck with a skim coat between plies to prevent the creeping of moisture from one ply to the next and to add to the flexibility of the belt.

A tough, open weave breaker strip may be inserted in the cover on the pulley side, occasionally on the bucket side also, to retard this action. It is standard practice to use breaker strip. Rubber covers $\frac{3}{32}$ in. thick and over.

DREADNAUGHT

32 and 35 oz. Duck

Designed for severe work and to meet conditions such as are found in stone crushing plants, ore reduction mills, coal and ash handling installations, and a wide variety of industrial plants where heavy materials in bulk are handled by means of bucket elevators. Heavy duck strength member.

Where material is dry and not abrasive a rubber cover both sides $\frac{1}{32}$ in. thick is used. For more severe service covers $\frac{1}{16}$ in. thick both sides are applied. In the majority of installations there is more wear on pulley than on bucket side and the cover thicknesses are proportioned accordingly. ⅛ by $\frac{1}{16}$ or even $\frac{3}{16}$x$\frac{1}{16}$ in. When the buckets are heavy and large the cover on that side of belt is increased up to ⅛ and even $\frac{3}{16}$ in. Cover selection demands careful study.

DELHI

32 oz. Duck

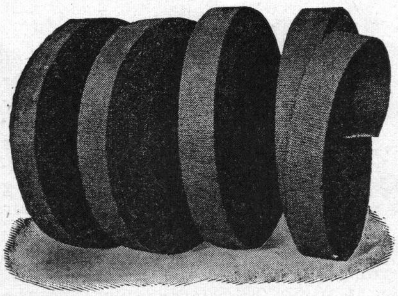
For general service in the handling of the lighter materials of a non-abrasive character such as gravel, sand, clay, and various moderately abrasive fines. Duck body, mildew-proofed.

These belts made friction surface, with covers $\frac{1}{16}$ in. both sides, or of other thickness called for.

Prices on Request

LEATHER BELTING

STANDARD



Oak Tanned

Constructed of solid, substantial steer hides and made into belting by hand. Carefully lapped and spliced together with a thick water-proof glue, making a mellow pliable belt that will wear indefinitely with little or no attention.

The belt will carry any reasonable load without slipping, will save power and prove economical in the long run.

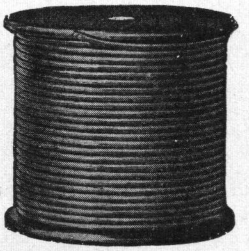
Standard List Per Foot

Width, in.	Single	Double	Width, in.	Single	Double	Width, in.	Single	Double
½	$0.12	$0.24	5	$1.20	$2.40	24	$5.76	$11.52
¾	.18	.36	5½	1.32	2.64	26	6.24	12.48
1	.24	.48	6	1.44	2.88	28	6.72	13.44
1¼	.30	.60	7	1.68	3.36	30	7.20	14.40
1½	.36	.72	8	1.92	3.84	32	7.68	15.36
1¾	.42	.84	9	2.16	4.32	34	8.16	16.32
2	.48	.96	10	2.40	4.80	36	8.64	17.28
2¼	.54	1.08	12	2.88	5.76	38	9.12	18.24
2½	.60	1.20	14	3.36	6.72	40	9.60	19.20
2¾	.66	1.32	16	3.84	7.68	42	10.08	20.16
3	.72	1.44	18	4.32	8.64	44	10.56	21.12
3½	.84	1.68	20	4.80	9.60	46	11.04	22.08
4	.96	1.92	22	5.28	10.56	48	11.52	23.04
4½	1.08	2.16						

Approximate weight per square foot: single, 15 oz.; double, 24 oz.

ROUND LEATHER BELTING

STANDARD



Solid

Made from selected oak tanned leather. A firm solid belt trimmed to an exceptional evenness and regularity of dimensions.

Size, in.	Per foot	Thickness, in.	Wt. spool, lbs.
⅛ heavy	$0.09½	8/64	2
3/16 heavy	.10	12/64	2½
¼ regular	.14	13/64	3
¼ heavy	.16½	15/64	3½
5/16 regular	.19½	14/64	4¼
5/16 heavy	.25	17/64	5
⅜ regular	.32	16/64	6
⅜ heavy	.40	18/64	7
½ heavy	.60	22/64	9

Tolerance in width ± 1/64 in., in thickness ± 1/32 in.

100 feet on a spool.

CHUTE AND LAUNDER LINING

(SKIRT BOARD MATERIAL)

CONDOR

Condor Chute Lining is appropriate for severe operating conditions, such as handling ore and rock in large lumps, coal, coke, run-of-mine coal, where corrosive liquids are present in considerable proportion, also where the volume of material is high, whether in large or small lumps, with high and continuous total abrasive action.

Available in thickness from ⅛ to 1 in., either with or without duck back.

Prices on Request

TROLLEY WIRE GUARD

BURONIK

RAYBESTOS-MANHATTAN, INC.
MANHATTAN RUBBER DIVISION
BURONIK
TROLLEY WIRE GUARD
PASSAIC, N.J.

Fire Retardant, Tear-Proof

A synthetic, flexible rubber skirt covering designed to provide full protection from exposed wires. It is being widely used to supplement the present methods of guarding, such as used conveyor belting, old fire hose and wood.

Made from high voltage synthetic Buronik rubber, this guard is highly fire-retardant and grease-proof. Approved by mine inspectors.

Per foot

Buronik—Nominal width 12½ in.; with clamps; wt. per 100 ft. 55 lbs. **$0.63**

Approximately 100 feet in a roll.

CONDOR

Cloth Inserted

Condor Guard, with its patented double crimp feature, will assume a natural shape that gives protection from the trolley wire when it is struck from either side. Like Buronik it has a low cost of installation as it requires no special hangers and can be hung by one man.

Condor Guard is made from a high voltage resistant synthetic and has an insertion of fabric which reduces tear hazard and prolongs the life of the guard.

Per foot

Condor—Nominal width 12 in.; with clamps; wt. per 100 ft. 68 lbs. **$0.42**

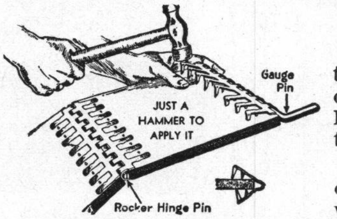
Approximately 100 feet in a roll.

Prices on Request

STEEL BELT LACING

ALLIGATOR

Cold Rolled Steel



For use on leather, rubber, balata, cotton or canvas stitched belts of any width or thickness and will hold securely the size belt it is intended for.

Lacing is smooth on both sides of belt and can run in contact with an idler pulley or on serpentine drives. It can be used in all classes of service, light work or heavy duty, on any kind of belting.

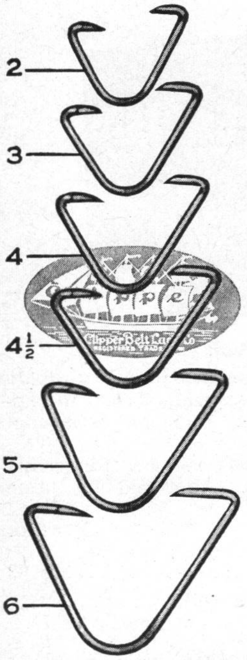
Nos.	Per box	Thickness belt, in.	Will join width, in.	Lgth. section, in.	Wt. per box, lbs.
1	$1.60	1/16 to 3/32	36	6	.4
5	1.80	3/32 to ⅛	36	6	.6
15	1.90	⅛ to 5/32	48	12	1
20	2.00	5/32 to 3/16	48	12	1.3
25D	2.50	3/16 to 7/32	48	12	1.5
25F	2.50	3/16 to 7/32	48	8	1.4
25G	5.00	3/16 to 7/32	96	12	2.7
27K	2.65	¼ to 9/32	48	12	1.8
27L	5.30	¼ to 9/32	96	12	3.3
35M	2.30	9/32 to 5/16	32	8	1.8
35N	3.40	9/32 to 5/16	48	12	2.7
45U	4.50	5/16 to ⅜	48	12	3.4
55W	5.20	⅜ to 7/16	48	12	4.9
65X	6.00	7/16 to ½	48	12	6
75	8.80	½ to ⅝	48	12	10

Packed in boxes complete with gauge pin and hinge pins.

Corrugated wire pins regularly supplied with Nos. 1 and 5 fasteners. Sectional steel rocker pins supplied regularly with Nos. 15 to 75 inclusive. Rawhide hinge pins supplied with Nos. 1 to 45 inclusive only upon request.

BELT HOOKS

CLIPPER



100% Staggered

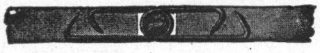
Made of special fatigue resisting steel. Both sides of belt are perfectly smooth and the joint is flexible and long lasting.

No two hook points enter the belt directly opposite each other, therefore no belt fibres are broken.

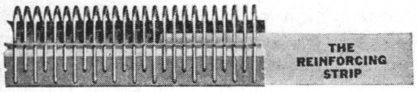
For all types of belting.

Standard Package

All sizes are carded 84 hooks on a card, 12 cards (one size) in a box, with sufficient number of lubrihide pins. Each box will lace 80 inches total width both ends of belt.



Cross section of embedded hook.



Facsimile card of hooks; all ready to slip into lacer.

Per box

No. 2—For thin belts over small pulleys; wt. per box 1 lb. $1.65

No. 3—For thin belts over medium size pulleys; wt. per box 1¼ lbs. 1.70

No. 4—For belts not over ¼ in. thick; wt. per box 1 5/16 lbs. 1.70

No. 4½—For heavy duty belts ¼ in. thick; wt. per box 1⅜ lbs. 1.85

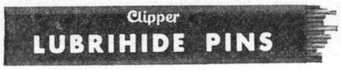
No. 5—For belts not over 5/16 in. thick; wt. per box 1¾ lbs. 2.00

No. 6—For belts not over ⅜ in. thick; wt. per box 2 lbs. 2.50

Twenty-five boxes in a carton.

BELT HOOK PINS

CLIPPER LUBRIHIDE



12 in. Long

Can be cut to suit requirements.

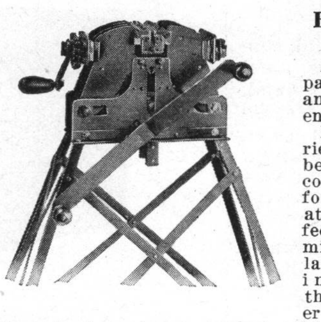
The only pins with built-in lubrication. This lubrication gives longer life to pin as well as joints.

Size, Nos.	Per package	Diam., in.	For hooks, Nos.	Wt. pkg., oz.
13	$1.60	3/32	1, 2, 3	2
12	1.60	7/64	4, 4½	2¼
11	1.60	⅛	5	3
10	2.00	9/64	5	4
9	2.25	5/32	6	4½
8	2.55	11/64	6	5½

Twenty-four in a package.

BELT LACERS

CLIPPER LITTLE GIANT



Cast Iron Body, Steel Faced

All working parts tempered and case hardened.

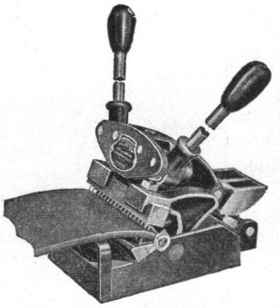
Easily carried to the belt. It is the correct height for easy operation. The perfect loops permit the use of larger connecting pins—therefore longer service. Each hook makes a perfect contact with the connecting pin. This distributes the pull equally on every hook in the joint.

Uses No. 2 to 6 hooks.

Complete with Stand Each

No. 9—Laces all belts from 1 to and including 6 in. in width and ⅜ in. thick, in one operation; repeat operation for wider belt; wt. each 56 lbs. $55.00

CLIPPER, STANDARD



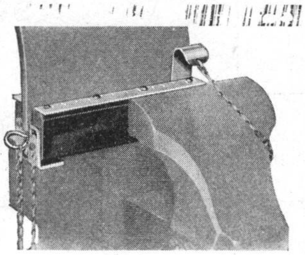
Cast Iron Body, Steel Faced

All working parts tempered and case hardened. Adapted to all types of belting and will accommodate any belt not over ⅜ in. thick.

Each

No. 3—6 in. wide, operated by two 9 in. lever handles, uses No. 2 to 6 hooks; wt. each 24 lbs. ...$35.00

CLIPPER, VISE TYPE



Cast Steel Faced

For use in any vise. Special attachment permits embedding hooks flush with surface of belt.

Each

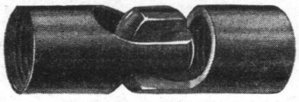
No. 04—4 in.; wt. each 4 lbs. $4.00

No. 06—6 in.; wt. each 6 lbs. 5.00

All above, one in a box.

ROUND BELT COUPLINGS

MORAN'S



Selected Steel

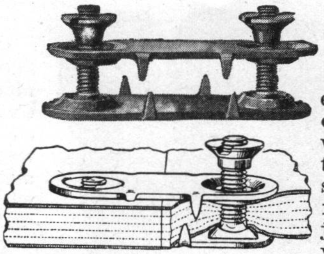
Outside of barrels flush with belt and ride over pulleys easily.

For belt, in.	Per dozen pairs	Wt. dozen pairs, oz.	For belt, in.	Per dozen pairs	Wt. dozen pairs, oz.
⅛	$3.00	1	5/16	$2.50	3
5/32	3.00	1	⅜	3.00	6
3/16	2.50	1	7/16	3.50	6
¼	2.00	2	½	4.00	10

One dozen pairs in a box.

BELT FASTENERS

FLEXCO HD



Bright Steel

Recognized throughout the world as the outstanding fastener for joining elevator and conveyor belts of any width.

Easy to apply, these fasteners make a water-tight butt joint of remarkably long life. Consequently, shut downs are avoided and the life of the conveyor belt lengthened.

Notice in the above illustration how the cuffed ends of the fastener compress the belts to evenly distribute the strain over the whole space covered by the plate and not against the bolt alone. It troughs naturally, conforms readily to crowned pulleys, can be run either side up or through trippers or take-up pulleys.

Complete with bolts, nuts and clips.

Nos.	Per box	For belt thick., in.	Min. pulley diam., in.	Wt. box, lbs.
1	$ 6.00	¼ to 7/16	12	1
1¼	6.50	5/16 to ½	14	1.8
1½	7.00	⅜ to 9/16	18	2.3
2	8.00	½ to ¾	30	3
2½	12.00	11/16 to 1	42	6

Ten sets in a box.

Number of Sets Required for Various Widths of Belting

Belt widths, in.	Belt fasteners, Nos. 1	1¼	1½	2	2½
12	10	8	8	..	..
16	13	10	10	9	..
18	15	12	12	10	9
20	16	13	13	11	10
24	20	16	16	14	13
26	22	17	17	15	14
28	23	18	18	16	15
30	25	20	20	17	16
36	30	24	24	21	19
42	35	28	28	24	22
48	40	32	32	28	26
60	50	40	40	35	32
72	60	48	48	42	39

EXTRA PARTS

List per 100

For fasteners, Nos.	Upper Plates	Lower Plates with Clips	Clips Only
1	$11.00	$11.00	$2.00
1¼	11.50	11.50	2.25
1½	12.00	12.00	2.50
2	18.00	18.00	3.00
2½	24.00	24.00	5.00

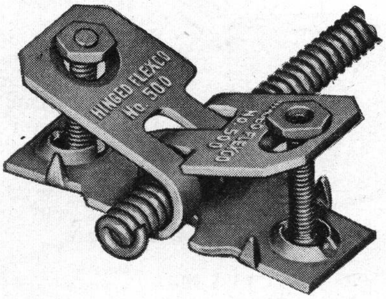
For Fasten's, Nos.	**1**	**1¼–1½–2**	**2½**
Bolts and Nuts			
Wt. per 100, lbs.	2.0	4.2	9.3
Per 100	$20.00	25.00	40.00
Bolts Only			
Wt. per 100, lbs.	1.4	3.3	6.7
Per 100	$8.00	10.00	16.00
Nuts Only			
Wt. per 100, lbs.	.6	.9	2.6
Per 100	$12.00	15.00	24.00

Open stock.

Note—See next page for Flexco tools.

BELT FASTENERS

HINGED FLEXCO



For Conveyor Belts ⅜ to ½ in. Thick

For some years there has been an insistent demand for a conveyor belt fastener that would make up into a separable joint. For instance, in the coal-mining field where conveyors are coming into wide spread use, it is necessary to extend the conveyors in order to keep within a reasonable distance of the working face. Thus the belt has to be lengthened periodically and a type of joint that would make this practical has become an essential need.

The Hinged Flexco Belt Fastener has been developed to meet the demand for such a joint.

By using the templet and tools (listed on this page) a torn belt can readily be inserted between two full width sections and made to train in line with the remainder of the sections in the conveyor.

One set of fasteners consists of 2 end plates, 2 bolts and 2 nuts.

No. 500 Fasteners

	Per box
No. 500—Wt. per box 13½ lbs.	$65.00

50 sets in a box.

Note—We break boxes and will ship number of fasteners required for individual width of belt.

Hinge Pins

Hinge pins are sold separately. When ordering specify belt width.

Width belt, in.	Each	Wt. each, lb.	Width belt, in.	Each	Wt. each, lb.
18	$4.80	.42	30	$ 8.00	.7
20	5.35	.47	36	9.60	.84
22	5.90	.51	42	11.20	.98
24	6.40	.56	48	12.80	1.12
26	6.95	.6	54	14.40	1.26
28	7.50	.65	60	16.00	1.4

Open stock.

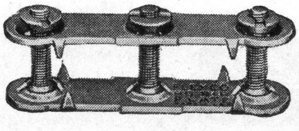
Number of Sets of Fasteners for Various Widths of Belting

Where sides of belt are left straight.

Width, belt, in.	No. of sets	Width, belt, in.	No. of sets
18	12	30	20
20	12	36	24
22	14	42	28
24	16	48	32
26	16	54	36
28	18	60	40

BELT RIP PLATES

FLEXCO HD



For Repairing and Patching Conveyor Belts

These are an outgrowth of Flexco HD Fasteners. They are longer for a better grip on irregular tears, and have a third bolt at the center to keep the edges of the rip from bulging up. They lengthen the life of conveyor belts and help to avoid long service interruptions by providing a means of mending rips in belts, patching wornout sections and bridging soft spots before they give way.

Rip plates should never be used to repair cross-wise breaks or tears for these extra long plates will not conform to the curvature of the pulleys.

Bright Steel

Complete with bolts, nuts and clips.

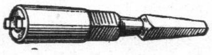
	Per box
No. RP1—For belts ¼ to ½ in. thick; wt. per box 1.8 lbs.	$10.40
No. RP2—For belts ⅜ to ¾ in. thick; wt. per box 4 lbs.	12.30

Ten sets in a box.

Note—For belts thicker than ¾ in. order No. RP2 Rip Plates with Extra Long Bolts; supplied at no extra cost.

BELT TOOLS

FLEXCO HD WRENCHES

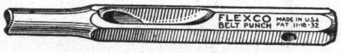


Absolutely essential for tightening Flexco nuts and should be included in all "first" orders. Can be used with carpenters' brace or ½ in. square hole ratchet wrench.

	Each
No. 1—For Fasteners No. 1 and Rip Plate RP1	$2.25
No. 2—For Fasteners Nos. 1¼, 1½ 2 and Rip Plate RP2	2.25
No. 3—For Fasteners Nos. 2½ and 3	2.25

Open stock.

FLEXCO HD PUNCHES



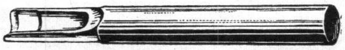
Straight side punch makes a straight clean hole with only the aid of a hammer.

	Each
No. 1 Punch—For Fasteners No. 1 and RP1	$4.00
No. 2 Punch—For Fasteners Nos. 1¼, 1½, 2 and RP2	5.00
No. 3 Punch—For Fasteners Nos. 2½ and 3	7.00

Open stock.

BELT TOOLS

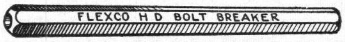
FLEXCO HD BORING BITS



May be used in place of the punch. Bores a clean hole quickly with aid of a carpenter's brace or slow speed electric drill.

	Each
No. 1 Bit—For Fasteners No. 1 and RP1	$2.25
No. 2 Bit—For Fasteners Nos. 1¼, 1½, 2 and RP2	2.25
No. 3 Bit—For Fasteners Nos. 2½ and 3	2.25

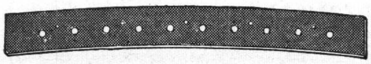
FLEXCO HD BOLT BREAKERS


FLEXCO H D BOLT BREAKER

For breaking off the excess amount of bolt protruding above the nut after the fastener has been tightly assembled on the belt. Does a faster and cleaner job than bolt cutters.

	Each
No. 1 Breaker—For Fastener No. 1	$1.25
No. 2 Breaker—For Fasteners Nos. 1¼, 1½ and 2	1.50
No. 3 Breaker—For Fasteners Nos. 2½ and 3	2.00

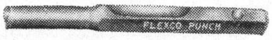
HINGED FLEXCO CURVED TEMPLETS



Absolutely essential for the application of Hinged Flexco Fasteners. It spaces the fastener correctly and the curved edge of the templet serves as a guide for proper cutting of belt.

Nos.	Each	For belt width, in.	Wt. each, lbs.
518	$ 5.20	18	.9
520	5.60	20	1.0
522	6.00	22	1.1
524	6.00	24	1.2
526	6.40	26	1.3
528	6.80	28	1.4
530	7.20	30	1.5
536	8.00	36	1.8
542	9.20	42	2.1
548	10.00	48	2.4
554	11.20	54	2.7
560	12.00	60	3.0

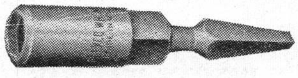
HINGED FLEXCO PUNCHES



Straight side; can be used as punch or drill; makes a straight, clean hole.

	Each
No. 1	$4.00

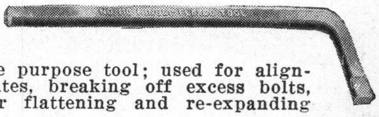
HINGED FLEXCO WRENCH



Absolutely essential for tightening the nuts on Hinged Flexco Fasteners.

	Each
No. 100	$4.00

HINGED FLEXCO APPLICATION TOOLS



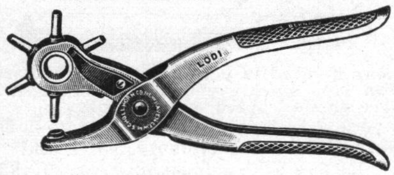
Triple purpose tool; used for aligning plates, breaking off excess bolts, and for flattening and re-expanding loop.

	Each
No. 110	$2.00

All above, open stock.

SPRING BELT PUNCHES

BERNARD REVOLVING



Six Tubes

Stamped cold rolled steel frame, bright finish, knurled handles, spring opening, drive tubes, heat treated index spring. 8 in. long.

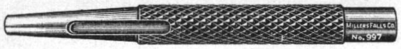
Strong, durable and designed to meet all requirements of leather punching. The expanded joint absorbs the pressure of abnormal loads and reinforces resistance to side strains.

	Per dozen
No. 386—6 tubes, Nos. 1, 2, 3, 4, 5 and 7; wt. per doz. 8¾ lbs.	**$66.00**

One in a box, one-half dozen in a carton with display stand.

BELT OR SADDLERY PUNCHES

MILLERS FALLS HOLLOW



High Grade Round Tool Steel

Centers are knurled to insure a firm grip. Carefully hardened and tempered their entire length. Cutting edges are sharpened.

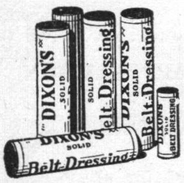
Nos.	Per dozen	Size, No.	Hole, in.	Body, in.	Wt. doz., lbs.
997-1	$4.60	1	5/64	⅜	1⅛
997-2	4.60	2	3/32	⅜	1⅛
997-3	4.60	3	7/64	⅜	1⅛
997-4	4.60	4	⅛	⅜	1⅛
997-5	4.60	5	9/64	⅜	1⅛
997-6	4.60	6	5/32	⅜	1⅛
997-7	4.60	7	3/16	⅜	1⅛
997-8	4.60	8	7/32	7/16	1½
997-9	4.60	9	¼	7/16	1½
997-10	5.20	10	9/32	7/16	1½
997-11	5.20	11	5/16	½	1¾
997-12	5.20	12	11/32	½	1¾
997-13	5.20	13	⅜	9/16	1¾
997-14	5.20	14	13/32	9/16	2
997-15	5.20	15	7/16	9/16	2⅛

One dozen in a box.

BELT DRESSING

DIXON'S WAX BAR

Solid



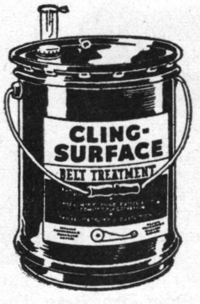
A superior dressing for all kinds of belts. Positively stops all slipping. Applied to belt without stopping the machinery. Will not harden or cause clogging. It preserves the original elasticity and pliability of the leather.

	Per bar
1 lb. bar—2x8 in. bar	**$0.90**

Twenty-five bars in a case.

BELT DRESSING

CLING-SURFACE



For All Belts

Preserves the belt and stops all slipping so completely that all belts or ropes can be run easy or slack under full loads.

Penetrates to every fiber of the belt; waterproofs; maintains pliability. Absolutely non-drying; contains no rosin or harmful ingredients.

Prolongs belt life by thoroughly lubricating and waterproofing belt fibers. Steps up delivered HP as much as 40% by preventing slippage. Protects equipment by permitting slack belt operation. Saves time by eliminating frequent take-up as well as delays caused by machinery and belt repairs.

Can be used for rubber, leather, canvas (plain or painted), hair or balata belts, rope drives, etc.

For treating any kind of leather that is not necessary to polish. Keeps all leather soft and waterproof.

Densities

Light density is especially useful for rubber and balata belts and where dust prevails, but can be used anywhere.

Medium density, suitable for any kind of belt, is best for ordinary, non-dusty conditions as in laundries, machine shops, central stations, compressor belts, printshops, etc.

Extra light density is for use in exceedingly dusty plants or very cold temperatures.

In Tubes

	Small	Large
Size tube	**(4 oz.)**	**(1 pt.)**
Tubes in carton	36	36
Wt. carton, lbs.	19	48
Per tube	$0.25	.75

Solid, in Bars

Size bars	**5 oz.**	**1 lb.**
Bars in carton	72	48
Wt. carton, lbs.	28	54
Per bar	$0.20	.50

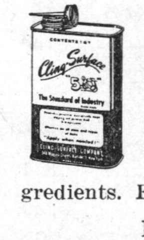
Liquid, in Cans

In light, medium and extra light densities.

Size can	**1 qt.**	**1 gal.**	**5 gal.**
Cans in case	12	6	1
Wt. case, lbs.	33	60	50
Per can	$1.75	4.50	20.00

Note—Specify density.

CLING-SURFACE "50"



The Standard of Industry

Prevents slip; waterproofs; permits slack operation. Increases delivered power. Protects against oil, dust and dry rot.

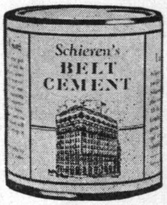
Not harmful to any belt. Free from rosin, explosive solvents or other harmful ingredients. Easy to apply; longer lasting.

In Applicator Cans

Size cans	**1 pt.**	**1 qt.**
Cans in carton	12	12
Cans in case	48	24
Wt. case, lbs.	63	64
Per can	$1.15	2.00

BELT CEMENT

DUXBAK



Waterproof

For making belts endless, for repairing etc. Used cold and hardens cold.

Also used for cementing wood, china, canvas, etc.

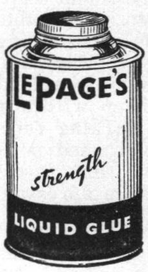
Positively waterproof and will withstand effects of fumes, acids, etc.

	Per can
Duxbak—In 1 pint cans	**$2.25**

Open stock.

LIQUID GLUE

LE PAGE'S



Used by carpenters, mechanics, in wood working plants, repair shops, etc.

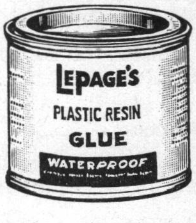
No cooking required.

No glue pot needed. No waste; every drop usable.

Nos.	**31**	**32**	**33**
Size cans	½ pt.	1 pt.	1 qt.
Dozen in case	2	1	1
Wt. dozen, lbs.	10	18	36
Per dozen	$9.00	15.00	27.00

PLASTIC RESIN GLUE

LE PAGE'S



Waterproof

Terrific strength, cold water mix, stainless, mixes easily, stronger than casein.

For lasting repairs on wood, furniture, leather, sporting goods, aircraft, and porous materials.

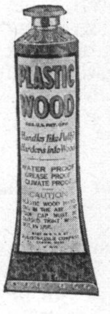
Nos.	**701**	**702**	**703**
Size cans, oz.	3½	8	16
Dozen in carton	3	1	1
Wt. carton, lbs.	14	9	16
Per dozen	$3.60	7.20	12.00

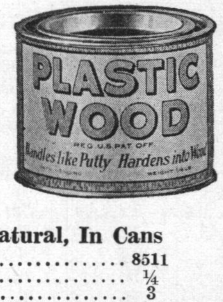
PLASTIC WOOD

Plastic Wood is wood compounded with a chemical binder in the form of paste which hardens on exposure to the air. After hardening, it has all the characteristics of wood except grain and will not chip, crumble, crack or disintegrate.

Natural, In Tubes

Nos.	**238**	**8501**
Size tube	Small	Large
Dozen in case	3	3
Wt. case, lbs.	3½	5
Per dozen	$1.20	3.00




PLASTIC
WOOD
Handles like Putty Hardens into Wood

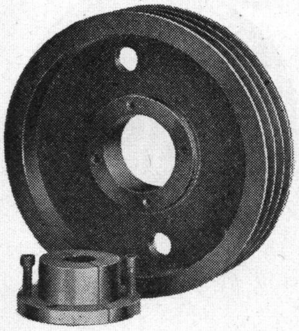
Natural, In Cans

Nos.	**8511**	**8521**
Size cans, lb.	¼	1
Cans in case	3	1
Wt. case, lbs.	14	15
Per dozen	$4.20	10.20

V-BELT SHEAVES

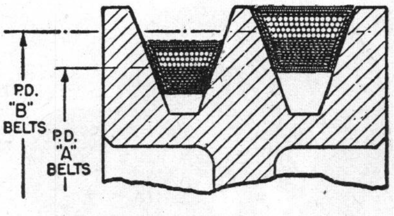
GATES VULCOMOUNT MULTI-DUTY TYPE VE

For Use with Either "A" or "B" Section V-Belts



Gates Vulcomount Multi-duty Sheaves (Type VE) are made of fine grain cast semi-steel, with one to six grooves, and in the 25 diameters listed below. The composite groove will operate with either "A" or "B" section V-belts as illustrated at the right.

These sheaves are equipped with split tapered bushings. Bushings are available with standard bores in $\frac{1}{16}$ in. increments from ½ in. to the maximum shown in the bushing price list below.



Sketch illustrates how either the "A" or "B" Section Belt may be used in Multi-Duty Sheaves.

Unique Constructon Gives You These Three Advantages

1—Stays Tight, Runs True. Tightening the cap screws of the Type VE sheave draws the split tapered bushing into the sheave hub, compressing it evenly until it grips the full circumference of the shaft. This gripping action, all the way around the shaft, produces a tight fit without wobble or eccentricity even on shafts that are slightly oversize or under size.

2—Mounts Two Different Ways. As shown below, the web or spokes are placed centrally with respect to the sheave grooves, and the bushing itself is offset. This means you can mount the Gates Multi-Duty Sheave (Type VE) in either of two positions—partially over the bearing, which reduces overhang and hence stress on the bearing—or in the reverse position, if required.

3—Cap Screws Can be Inserted into Either Side of the Sheave. The two illustrations below show the special arrangement of tapped holes and counter bored clearance holes in both the bushing head and the sheave hub. The unique arrangement of these screw holes means that no matter which mounting position you choose, you can always insert the cap screws in the side of the sheave which is easiest to reach.

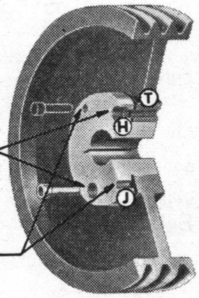
This feature is shown in the two illustrations below. In Position One, the counter bored clearance holes in the Bushing Head are used to assemble the sheave. In Position Two, the sheave position is reversed, with the bushing taper pointing in the opposite direction. In this case the two counter bored clearance holes in the Sheave Hub are used to assemble the sheave. And no matter which mounting is used, there will always be a pair of jackscrew holes in the side of the sheave which is easiest to reach, making removal easy.

Position One

Bushing head on the left—cap screws inserted through the bushing head into sheave.

To Install—Line up counter bored clearance holes (H) in the head of split tapered bushing with tapped holes (T) in sheave and insert cap screws.

To Remove—Insert cap screws in jackscrew holes (J) in the bushing head and tighten.

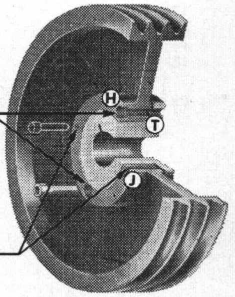


Position Two

Sheave position reversed with bushing head now on the right—cap screws inserted through sheave into bushing head.

To Install—Line up counter bored clearance holes (H) in sheave with tapped holes (T) in head of split tapered bushing, and insert cap screws.

To Remove—Insert cap screws in jackscrew holes (J) in sheave and tighten.



List Prices Each

Pitch Diameter Using A or No. 2 Section Belts	Pitch Diameter Using B or No. 3 Section Belts	Number of Grooves					
		1	2	3	4	5	6
3.0	....	$ 5.00	$ 6.90	$ 8.30	$ 9.80	$11.60	$13.40
3.2	....	5.10	7.00	8.40	10.00	11.80	13.60
3.4	....	5.20	7.10	8.50	10.20	12.00	13.80
3.6	....	5.30	7.20	8.60	10.40	12.20	14.00
3.8	....	5.40	7.30	8.70	10.60	12.40	14.30
4.0	....	5.50	7.40	8.90	10.90	12.60	14.50
4.2	4.6	5.60	7.60	9.10	11.20	12.90	14.80
4.4	4.8	5.70	7.80	9.30	11.50	13.20	15.20
4.6	5.0	5.80	8.00	9.50	11.90	13.50	15.60
4.8	5.2	6.00	8.20	9.80	12.30	13.80	16.10
5.0	5.4	6.20	8.50	10.10	12.70	14.20	16.60
5.2	5.6	6.40	8.70	10.40	13.20	14.50	17.10
5.4	5.8	6.60	9.00	10.80	13.70	15.00	17.60
5.6	6.0	6.80	9.30	11.70	14.20	15.50	18.10
5.8	6.2	7.00	9.60	11.40	14.60	15.90	18.50
6.0	6.4	7.20	9.90	11.80	15.10	16.30	19.10
6.2	6.6	7.40	10.20	12.10	15.60	16.70	19.60
6.4	6.8	7.60	10.50	12.50	16.10	17.20	20.10
7.0	7.4	8.00	10.80	13.50	17.30	23.00	31.10
8.2	8.6	9.10	12.00	15.30	19.00	24.80	33.80
9.0	9.4	9.70	12.70	16.20	20.10	25.90	34.60
10.6	11.0	11.10	14.30	18.80	22.50	28.30	37.40
12.0	12.4	12.90	15.90	20.20	24.70	30.20	39.10
15.0	15.4	15.20	19.00	24.70	29.60	35.20	42.60
18.0	18.4	17.60	22.60	29.60	35.90	40.30	48.30

Extra Bushings

Bushing, Nos.	Each	Maximum bore, in.
1010	$2.00	1¼
1015	2.00	1¼
1025	2.00	1¼
1310	2.30	1⅝
1315	2.30	1⅝
2016	3.00	2½

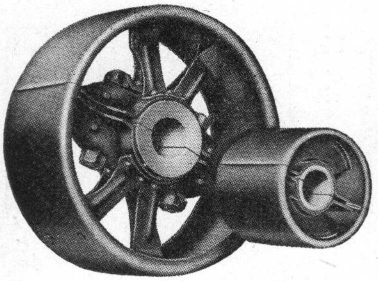
We are in a position to furnish a complete line of cast iron sheaves for any size belts in any diameter or number of grooves. We can also furnish single groove pressed steel sheaves for No. A, 2, B and 3 belts.

To order a complete drive the following information should be furnished:

HP and full load speed of driving shaft.
RPM of driven shaft.
Required center distances.
Diameter and keyseat of driving shaft.
Diameter and keyseat of driven shaft.
Length of extension on both shafts.
Type of drive.
Kind of machine being driven.

STEEL SPLIT PULLEYS

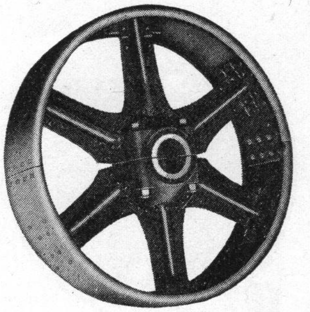
DODGE



Made in various types of construction with face width and diameter of pulley determining the type furnished.

Dodge Steel Split Pulleys are designed for normal double belt service and for average speed and service conditions.

Interchangeable bushings can be supplied in sizes not exceeding the maximum bore limit indicated below. Prices below include bushings.



Complete with Bushings

Diam., in.	Face width, in. 2 Each	2 Wt., lbs.	3 Each	3 Wt., lbs.	4 Each	4 Wt., lbs.	5 Each	5 Wt., lbs.	6 Each	6 Wt., lbs.	8 Each	8 Wt., lbs.	10 Each	10 Wt., lbs.	12 Each	12 Wt., lbs.	14 Each	14 Wt., lbs.	Max. bore, in.
3	$.....	...	$ 5.60	1.2	$ 6.00	1.3	$ 7.20	1.5	$ 7.60	1.6	$.....	...	$.....	...	$.....	..	$.....	...	1 7/16
4	.....	...	6.60	2.0	7.00	2.3	7.40	2.5	7.90	2.8	......	...	......	...	......	..	......	...	
5	.....	...	7.70	2.8	8.10	3.0	8.50	3.3	8.90	3.5	......	...	......	...	......	..	......	...	1 15/16
6	* 8.30	3.5	8.70	4.0	9.10	4.4	9.50	4.8	10.00	5.2	13.20	8.3	16.20	9.4	17.00	11	......	...	
7	....	...	*10.80	4.6	11.30	5.2	11.80	5.8	12.40	6.5	17.00	9.5	17.80	11	18.70	12	......	...	2 7/16
8	*10.80	4.7	11.30	6.3	12.00	6.8	12.80	8.5	13.60	9.5	18.50	14	19.50	17	22.50	19	......	...	
9	.....	...	*11.80	7.3	12.80	8	13.80	9.8	14.90	11	20.00	16	21.20	19	23.70	22	......	...	
10	*11.60	6.0	12.30	8	13.60	9	14.90	11	16.20	12	21.60	18	22.90	21	24.10	24	......	...	
11	.....	...	*12.80	9	*14.40	10	.....	....	17.60	14	.....	..	.....	..	.....	..	......	...	
12	*12.40	6.3	13.30	11	15.20	12	17.10	15	19.00	17	25.00	25	26.50	28	28.00	31	47.50	33	
14	.....	...	15.50	12	17.40	14	19.50	17	21.50	19	28.00	29	30.00	32	32.00	36	51.00	38	3½
16	.....	...	17.70	14	19.50	15	21.70	20	23.80	21	31.00	34	33.50	37	36.00	41	54.50	44	
18	.....	...	19.90	16	21.70	17	24.00	22	26.10	26	34.00	45	37.00	49	40.00	53	.....	..	
20	.....	...	*22.10	18	24.00	19	*26.40	25	28.50	29	37.00	50	40.50	53	44.00	58	* 61.50	79	
22	.....	...	.....	....	26.40	30	.....	....	31.00	41	40.50	51	44.20	56	48.00	61	.....	..	
24	.....	...	.....	....	28.90	31	*31.20	33	33.50	53	44.00	60	48.00	66	52.00	71	* 68.50	95	
26	.....	...	.....	....	36.00	32	*39.50	35	43.00	56	49.00	63	55.50	70	62.00	75	.....	..	
28	.....	...	.....	....	39.00	33	*43.00	37	47.00	60	54.00	65	61.50	97	69.00	102	.....	..	
30	.....	...	.....	....	42.00	34	*46.50	38	51.00	62	59.00	69	67.50	100	76.00	106	* 93.00	182	
32	.....	...	.....	....	*45.00	36	*49.50	40	*54.00	66	* 63.50	74	* 73.00	104	* 83.00	110	.....	...	
34	.....	...	.....	....	*48.00	38	.....	....	*58.00	67	* 68.50	79	* 79.00	107	* 90.00	114	.....	...	
36	.....	...	.....	....	*51.00	40	*56.50	50	62.00	69	73.50	105	85.00	111	97.00	119	*121.00	201	4 7/16
38	.....	...	.....	....	.....	....	.....	....	*66.00	97	* 78.50	109	* 91.00	117	*103.00	125	......	...	
40	.....	...	.....	....	*57.00	76	.....	....	*70.00	100	* 83.50	112	* 97.00	122	*110.00	131	*143.00	220	
42	.....	...	.....	....	.....	....	.....	....	*75.00	103	* 88.50	116	*103.00	127	*117.00	137	......	...	
44	.....	...	.....	....	.....	....	.....	....	*78.00	105	* 93.50	119	*109.00	131	*125.00	143	......	...	
48	.....	...	.....	....	.....	....	.....	....	*85.00	110	*103.00	126	*122.00	140	*140.00	155	......	...	

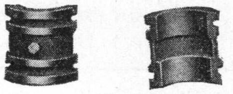
Single Hub Construction — 2 Hubs

*Stocked in Crown Face Only. Other listed sizes stocked in both crown and straight faces. Crown face will be furnished unless straight face is specifically ordered.

Made to Order Pulleys—When quantities are sufficient for a production run, pulleys not stocked can be furnished in either crown or straight face. Prices on application.

Weights shown in above table do not include weight of bushing.

BUSHINGS
For Dodge Steel Split Pulleys



Bore of Bush- in.		L	N	SF	G	H	I	Bushing KS., in. Width	Bushing KS., in. Depth	Shaft KS., in. Width	Shaft KS., in. Depth	Size of key, in.
	Type	L	N	SF	G	H	I					
	Each	$1.30	$1.70	$2.00	$3.50	$4.50	$7.00					
	Outside diameter, in.	1 7/16	1 15/16	2 7/16	3½	3½	4 7/16					
	Length, in.	3	3	2⅜	3⅝	6¼	6¼					
	Smallest bore, in.	½	½	⅞	⅞	1	1 7/16					
	Max. bore without K.S., in.	1⅜	1⅞	2⅜	3 7/16	3 7/16	4⅜					
	Max. bore with K.S., in.	1	1½	2	3	3	4					
11/16		.6#	1.2#	...	...	...	...	3/16	3/32	3/16	3/32	3/16x3/16
15/16		.5	1.0	1.6#	5.1#	...	...	¼	⅛	¼	⅛	¼x¼
1 3/16		.4	.9	1.7	4.3#	7.8#	...	¼	⅛	¼	⅛	¼x¼
1 7/16		...	.8	1.5	4.3	6.8	13.4#	⅜	⅛	⅜	3/16	⅜x5/16
1 11/16		...	.6	1.3	4.0	6.7	13.1	⅜	⅛	⅜	3/16	⅜x5/16
1 15/16		...	...	1.0	3.6	6.3	12.7	½	⅛	½	¼	½x⅜
2 3/16		...	...	.6	3.5	6.3	11.8	½	⅛	½	¼	½x⅜
2 7/16					3.1	5.5	11.3	⅝	3/16	⅝	5/16	⅝x½
2 11/16					2.8	5.8	9.3	⅝	3/16	⅝	5/16	⅝x½
2 15/16					2.5	4.8	9.1	¾	3/16	¾	⅜	¾x9/16
3 3/16					1.5	2.6	7.8	¾	3/16	¾	⅜	¾x9/16
3 7/16					.3	.5	6.5	⅞	¼	⅞	7/16	⅞x11/16
3 15/16							5.5	1	¼	1	½	1 x¾
4⅜							.8	1	¼	1	½	1 x¾

Prices are for one complete bushing as required for each hub. For number of hubs per pulley and symbol of hub see table below. As the necessary bushings are included in the pulley price, these bushing prices are for extra bushings when required.

Keyseating Bushings

For Keyseating one bushing for pulleys 3" to 5" diam. $1.00
For Keyseating one bushing for pulleys 6" and larger 2.00
Keys are not included in price. Bushings are not keyseated unless requested in which case the above extra applies.

HUBS IN DODGE STEEL SPLIT PULLEYS

Hub Symbol and Number of Hubs per Pulley

Pulley diam., in.	Face width, in. 2	3	4	5	6	8	10	12	14
3	...	L	L	L	L	...	...	...	...
4–5	...	N	N	N	N	...	...	...	...
6–7	SF	SF	SF	SF	SF	SF	SF	SF	...
8–11	SF	G	G	G	G	G	G	G	...
12–14	SF	G	G	G	G	G	G	G	G
16	...	G	G	G	G	G	G	G	G
18–22	...	G	G	G	G	H	H	H	G
24	...	G	G	G	H	H	H	H	G
26	...	...	G	G	H	H	H	H	H
28–34	...	...	G	G	H	H	I	I	I
36	...	...	G	H	H	I	I	I	I
38–40	...	...	I	I	I	I	I	I	I
42–48	...	...	...	...	I	I	I	I	I

Single Hub Construction — 2 Hubs

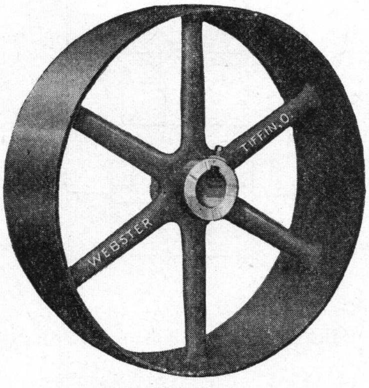
Length Through Hubs (Total Length)

Pulley diam., in.	Face width, in. 2	3	4	5	6	8	10	12	14
3–5	...	3	3	3	3	...	...	....	....
6–7	2⅜	2⅜	2⅜	2⅜	2⅜	6¾	8¾	10¾	....
8–11	2⅜	3⅝	3⅝	3⅝	3⅝	7½	9½	11½	....
12–14	2⅜	3⅝	3⅝	3⅝	3⅝	7½	9½	11½	13½
16	...	3⅝	3⅝	3⅝	3⅝	7½	9½	11½	13½
18–22	...	3⅝	3⅝	3⅝	3⅝	6¼	6¼	6¼	11½
24	...	3⅝	3⅝	3⅝	6¼	6¼	6¼	6¼	11½
26–34	...	...	3⅝	3⅝	6¼	6¼	6¼	6¼	15
36	...	...	3⅝	6¼	6¼	6¼	6¼	6¼	15
38–40	...	...	6¼	6¼	6¼	6¼	6¼	6¼	15
42–48	...	...	...	...	6¼	6¼	6¼	6¼	15

Examples: 12x 4 pulley has one G hub, 3⅝" length.
12x 8 pulley has two G hubs, 7½" total length.
48x14 pulley has two I hubs, 15" total length.

CAST IRON PULLEYS

SOLID AND SPLIT



Solid Single Arm

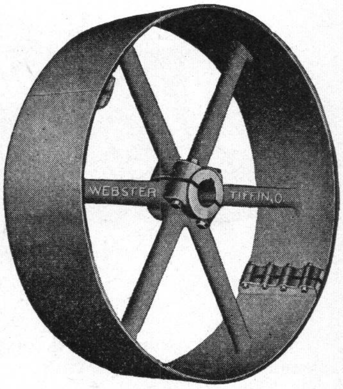
Cast iron pulleys are designated in accordance with the service which they are to perform, such as double belt, triple belt, etc., these terms referring to leather belting to be used in connection with them. These pulleys are designed and built to withstand the strains under which the respective belts, whether single, double or triple, can be expected to operate.

Keys are never furnished unless specifically ordered.

Ordering

In ordering cast iron pulleys, give the following information:

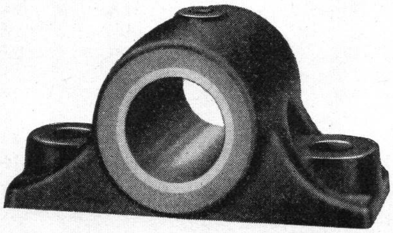
Double belt, triple belt, etc.
Solid or split construction.
Crown or straight face.
Set screws only, or key-seated and set screws.
Special conditions of service.
Special hub details if any, and location of hub.



Split Single Arm

JOURNAL BEARINGS

SOLID



2-Bolt Base

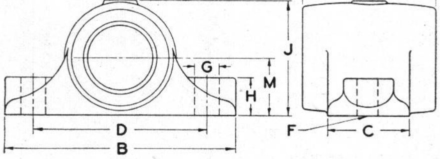
Suitable for use where speeds and powers are moderate and where a split bearing is not required.

Bearings are babbitted and carefully bored. A grease groove in the top of the bearing assures proper lubrication at all parts of the load area. Cap is tapped for grease cup or pressure fitting.

Bearing ends are finished and provide accurate bearing surfaces for set collars, pulleys, gears, sprockets and other limiting devices.

Shaft size, in.	Each	Wt. each, lbs.	Shaft size, in.	Each	Wt. each, lbs.
½	$1.70	.7	1 7/16	$3.00	4.5
¾	1.80	1.0	1 11/16	4.00	6.2
15/16	2.00	1.5	1 15/16	5.00	9.
1 3/16	2.40	2.7			

Note—Larger sizes available on request.



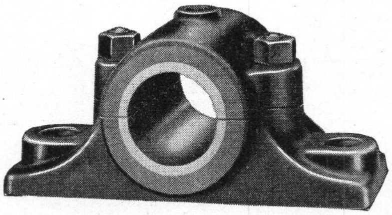
Dimensions in Inches

Shaft size, in.	A	B	C	D	F Bolt	G	H	J	M
½	1⅜	3	1	2⅛	5/16	½	⅜	1 7/16	¾
¾	1⅝	3½	1⅛	2½	5/16	½	½	1 11/16	⅞
15/16	2	4	1½	3	⅜	9/16	⅝	2	1
1 3/16	2½	4¾	1¾	3½	⅜	⅝	¾	2 7/16	1¼
1 7/16	3	5½	2	4	½	11/16	⅞	2¾	1⅜
11/16	3½	6¼	2¼	4½	½	¾	1	3 1/16	1½
1 15/16	4	7	2½	5¼	⅝	13/16	1⅛	3½	1¾

Open stock.

JOURNAL BEARINGS

SPLIT



2-Bolt Base

For use where a split type bearing is preferred and where speed and powers are limited.

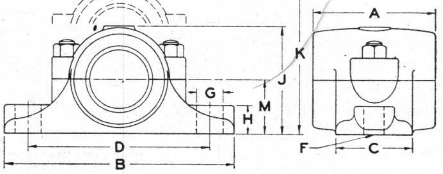
Babbitted and carefully bored; proper lubrication assured; cap tapped for grease cup or pressure fitting.

The base or bottom is finished and a very close tolerance is maintained from the base to the center of the bores. A desirable feature where bearings are to be installed on finished surfaces and where perfect alignment is required.

Bearing ends are finished and provide accurate bearing surfaces for set collars, pulleys, gears, sprockets or other limiting devices.

Shaft size, in.	Each	Wt. each, lbs.	Shaft size, in.	Each	Wt. each, lbs.
½	$2.30	.8	1 7/16	$4.00	5.0
¾	2.50	1.1	1 11/16	5.00	6.5
15/16	2.70	2.0	1 15/16	6.20	9
1 3/16	3.20	3.3			

Note—Larger sizes available on request.



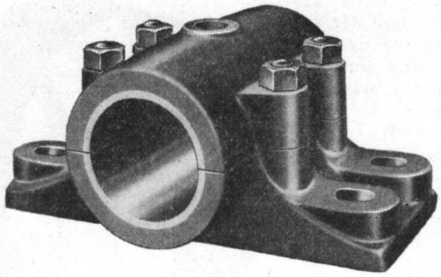
Dimensions in Inches

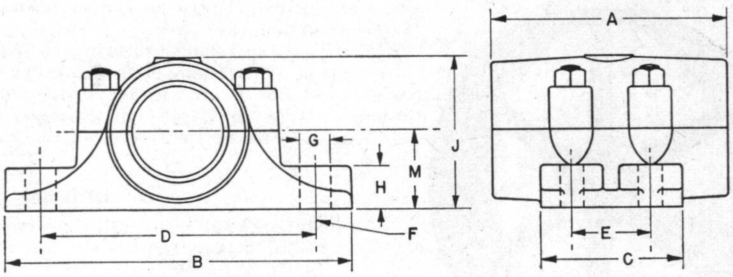
Shaft size, in.	A	B	C	D	F Bolt	G	H	J	K	M
½	1⅜	3¾	1	2⅞	5/16	½	⅜	1 7/16	1½	¾
¾	1⅝	4¼	1⅛	3¼	5/16	½	½	1 11/16	2	⅞
15/16	2	4¾	1½	3⅝	⅜	9/16	9/16	2	2⅜	1
1 3/16	2½	5¼	1¾	4⅛	⅜	⅝	⅝	2 7/16	2⅞	1¼
1 7/16	3	6¼	2	4⅞	½	11/16	¾	2¾	3⅜	1⅜
1 11/16	3½	6¾	2¼	5¼	½	¾	13/16	3 1/16	3¾	1½
1 15/16	4	7½	2½	6	⅝	13/16	15/16	3½	4¼	1¾

Open stock.

PILLOW BLOCKS

HEAVY RIGID





4-Bolt Base

A well proportioned, rugged plain babbitted Pillow Block. It is suitable for a wide range of industrial applications requiring a grease lubricated bearing.

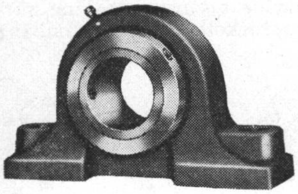
The base and the ends of the bearing are finished. Babbitt is carefully bored to size and provided with grease grooves.

Dodge Heavy Rigid Pillow Blocks are made in 4 bolt base construction only. For shaft sizes under 1 15/16 in. the Dodge Split Journal **Bearing shown on the preceding page is recommended.**

*Shaft size, in.	Each	Wt. each, lbs.	A, in.	B, in.	C, in.	D, in.	E, in.	F bolt, in.	G, in.	H, in.	J, in.	M, in.
1 15/16	$ 7.20	12	5	8¼	3½	6½	1¾	½	¾	⅞	3 7/16	1¾
2 3/16	9.00	16	5⅝	8¼	3½	6¾	1¾	½	¾	1	3¾	1⅞
2 7/16	11.00	22	6¼	10¼	4	8	2	⅝	1	1⅛	4 3/16	2⅛
2 11/16	14.00	28	6⅞	10½	4¼	8¼	2¼	⅝	1	1¼	4 7/16	2¼
2 15/16	18.00	34	7½	11	4½	8¾	2½	⅝	1	1⅜	4⅞	2½
3 7/16	26.00	49	8¾	12½	5	10	2¾	¾	1⅛	1½	5⅝	2⅞
3 15/16	36.00	65	10	13	5½	10½	3	¾	1⅛	1¾	6 3/16	3⅛
4 7/16	54.00	90	11¼	14¾	6½	12	3¼	⅞	1⅜	1⅞	6 15/16	3½
4 15/16	80.00	120	12½	16½	7¼	13¼	4	1	1½	2	7 7/16	3¾
5 7/16	106.00	160	13¾	17	8	13¾	4¼	1	1½	2¼	8⅛	4⅛
5 15/16	132.00	205	15	18¾	8½	15¼	4½	1⅛	1¾	2½	8 13/16	4½

*These Pillow Blocks are available in larger sizes. Bores Not Listed—Price on application.

DODGE BALL BEARING TYPE SC

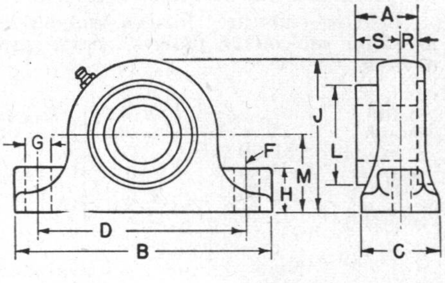


Meets the demand for a practical precision built anti-friction bearing for small shafts and moderate loads.

Rugged one-piece, streamlined outer housing. Deep groove precision bearing with large balls and retainer to minimize wear. Long inner race locking collar keeps bearing tight on shaft. Fully self-aligning.

Lubrication is supplied through pressure fitting and hole in outer race. Pin in outer housing extending into bearing outer race locates lubrication hole and prevents rotation of outer race. Effectively sealed to retain lubrication and exclude dust and dirt.

Elongated bolt holes allow lateral adjustment.



Shaft sizes, in.	Other sizes available, in.	Each	Weight each, lbs.	A, in.	B, in.	C, in.	D, in.	F bolt, in.	G, in.	H, in.	J, in.	L, in.	M, in.	R, in.	S, in.
¾	....	$ 5.20	1.5	1 3/16	4¾	1⅜	3¾	⅜	9/16	¾	2⅞	1 17/32	1 5/16	15/32	23/32
15/16	⅞, 1	5.60	2.0	1 7/32	5⅛	1½	4⅛	⅜	9/16	13/16	3 3/16	1 23/32	1 7/16	29/64	49/64
1 3/16	1⅛	6.60	3.5	1 13/32	6	1¾	4¾	½	11/16	15/16	3¼	2 1/16	1⅝	31/64	59/64
1 7/16	1¼, 1⅜	7.80	4.5	1⅝	6⅛	1⅞	5	½	11/16	1 1/16	3 11/16	2 7/16	1⅞	9/16	1 1/16
1½	1⅝	8.40	5.4	1¾	6⅝	2	5⅜	½	11/16	1¼	4⅛	2¾	2⅛	37/64	1 11/64
1 11/16	1¾	9.80	7.1	1 13/16	7	2⅛	5¾	½	11/16	1¼	4 5/16	2 15/16	2⅛	19/32	1 7/32
1 15/16	2	11.20	8.4	1 29/32	7¾	2¼	6¼	⅝	13/16	1⅜	4 9/16	3 1/16	2¼	41/64	1 17/64
2 3/16	2¼	13.20	11.0	2 3/16	8¼	2⅜	6¾	⅝	13/16	1½	5 1/16	3 7/16	2½	25/32	1 13/32
2 7/16	....	16.00	13.5	2 9/32	9	2½	7¼	⅝	⅞	1⅝	5½	3⅞	2¾	23/32	1 9/16

Furnished in Non-Expansion type only.

SELECTION TABLE DODGE SC BALL BEARINGS

Table of Radial Load Capacities in Pounds Based on a Minimum of 30,000 Hours of Service

Shaft sizes, in.	Revolutions Per Minute										
	50	100	250	500	750	1000	1250	1500	2000	2500	3000
¾	240	225	190	160	140	125	115	110	100	96	85
⅞, 15/16, 1	285	265	230	190	170	155	140	135	120	115	105
1⅛, 1 3/16	390	365	310	260	230	205	195	180	165	155	145
1¼, 1⅜, 1 7/16	470	440	380	315	275	250	235	220	200	185	175
1½, 1⅝	640	595	510	425	375	340	315	295	270	250	235
1 11/16, 1¾	700	650	560	465	410	370	345	325	295	275	260
1 15/16, 2	735	685	590	490	430	390	360	340	310	285	270
2 3/16, 2¼	875	820	700	585	510	465	430	405	370	340	320
2 7/16	1010	940	800	670	585	535	495	465	425	396	370

Ratings are for general machinery applications with fairly smooth loads. For heavy shock loads, extreme vibrations or constantly reversing loads decrease ratings 50%.

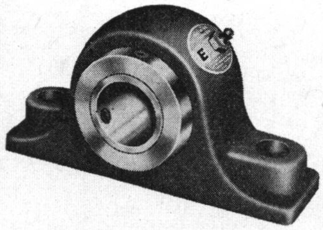
Ratings are for bearings mounted on standard cold finished shafting with commercial undersize tolerances.

When mounted on shafts made to special tolerances for snug fits, ratings may be increased. Consult us giving full information on the proposed application.

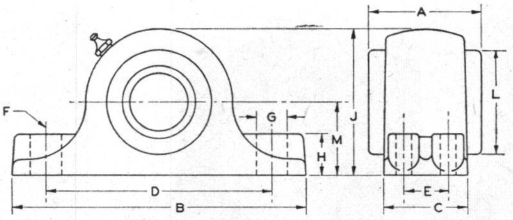
All above, open stock.

PILLOW BLOCKS

DODGE-TIMKEN TYPE E



With Timken Tapered Roller Bearing



The Timken tapered roller bearings provide radial and thrust load carrying capacity. There is sufficient self-alignment in their design and arrangement to compensate for any normal misalignment.

Four set screws passing through bearing race lock it firmly in place and prevent rotation in shaft. Long bearing inner race distributes load over considerable length of shaft.

Labyrinth seals retain lubricant and exclude dirt. Elongated bolt holes in base provide for lateral adjustment.

								2-Bolt Base	4-Bolt Base						
Shaft size, in.	Other sizes available, in.	Each	Wt. each, lbs.	A, in.	B, in.	C, in.	D, in.	F bolts, in.	E, in.	F bolts, in.	G, in.	H, in.	J, in.	L, in.	M, in.
1 3/16	....	$19.00	5	2¾	6	1⅞	4¾	⅜	...	..	9/16	⅞	3	2¼	1½
1 7/16	1⅜	21.00	7	3	7⅜	2⅛	5¾	½	...	..	¾	1⅛	3¾	2¾	1⅞
1 11/16	1½, 1⅝	25.00	10	3⅜	7⅞	2⅜	6¼	½	...	..	¾	1¼	4¼	3 3/16	2⅛
1 15/16	1¾, 2	30.00	12	3½	8⅞	2½	7	⅝	...	..	⅞	1⅜	4½	3 7/16	2¼
2 3/16	....	35.00	14	3¾	9⅝	2⅝	7¾	⅝	...	..	⅞	1½	5	3¾	2½
2 7/16	2¼, 2½	45.00	18	4	10½	2⅞	8½	⅝	...	..	⅞	1⅝	5½	4 1/16	2¾
2 15/16	2 11/16, 3	60.00	26	4½	12	3⅛	9½	¾	...	..	1	1⅞	6¼	4 23/32	3⅛
3 7/16	3 3/16, 3½	90.00	40	5	14	3⅝	11	⅞	...	..	1 3/16	2¼	7½	5 7/16	3¾
3 15/16	4	130.00	62	6¼	15¼	4⅝	12½	..	2¼	¾	1¼	2 7/16	8½	5 15/16	4¼

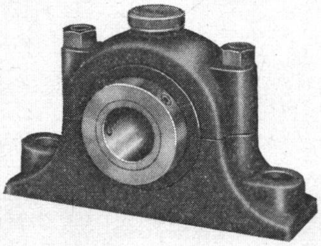
Furnished in Non-Expansion Type only.

SELECTION TABLE DODGE-TIMKEN TYPE E BEARINGS

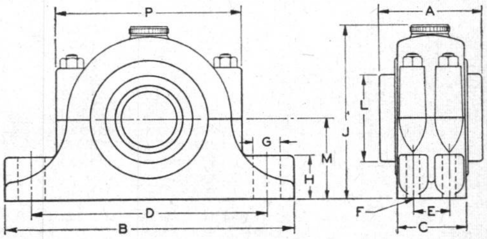
Table of Radial Load Capacities in Pounds Based on a Minimum of 30,000 Hours of Service

	Revolutions Per Minute										
Shaft size, in.	50	100	250	500	750	1000	1250	1500	2000	2500	3000
1 3/16	1000	930	795	660	580	540	500	475	440	405	390
1⅜, 1 7/16	1500	1400	1200	1000	890	815	765	720	665	620	580
1½, 1⅝, 1 11/16	2080	1950	1670	1390	1225	1125	1050	1000	915	855	815
1¾, 1 15/16, 2	2700	2520	2160	1800	1590	1460	1360	1300	1185	1110	....
2 3/16	2920	2730	2340	1950	1725	1590	1490	1400	1290	1200	....
2¼, 2 7/16, 2½	3030	2830	2450	2020	1790	1650	1540	1450	1340	....	....
2 11/16, 2 15/16, 3	3330	3100	2660	2220	1975	1810	1700	1600	....	....	....
3 3/16, 3 7/16, 3½	5600	5240	4500	3740	3320	3040	2850	2690	....	....	....
3 15/16, 4	7580	7050	6600	5050	4480	4110	3850	....	....	....	....

DODGE-TIMKEN DOUBLE INTERLOCK



With Special Duplex Timken Tapered Roller Bearings



For general power transmission service and for many machine applications.

On each end of the inner race is a steel collar having two headless set screws spaced 120 degrees apart and extending through clearance holes in the inner race to the shaft.

Have substantial radial and thrust load carrying capacities. Extra long inner race.

Fully self-aligning; elongated bolt holes permit lateral adjustment; labyrinth grease and dust seals.

						2-Bolt Base		4-Bolt Base									
Shaft size, in.	Other sizes available, in.	Each	Wt. each, lbs.	A, in.	B, in.	C, in.	F, bolt, in.	C, in.	E, in.	F bolt, in.	D, in.	G, in.	H, in.	J, in.	L, in.	M, in.	P, in.
1 7/16	1⅜	$28.00	14	3	8	2 1/16	½	...	...	..	6½	¾	1¼	5 3/16	2¾	2⅜	5⅜
1 11/16	1½, 1⅝	32.00	17	3⅜	9	2¼	½	...	...	..	7½	¾	1⅜	5⅝	3 3/16	2⅝	5 15/16
1 15/16	1¾, 2	37.00	20	3½	10	2⅜	⅝	...	...	..	8¼	15/16	1½	6 1/16	3 7/16	2⅞	6½
2 3/16	....	45.00	25	3¾	11	2½	⅝	...	...	..	9	15/16	1 9/16	6 7/16	3¾	3	7 3/16
2 7/16	2¼, 2½	55.00	30	4	12	2⅝	⅝	...	...	..	10	1	1¾	6⅞	4 1/16	3¼	7 9/16
2 15/16	2 11/16, 3	72.00	45	4½	13½	2 15/16	¾	...	...	..	11¼	1⅛	2	7⅞	4 23/32	3¾	8 11/16
3 7/16	3 3/16, 3½	110.00	70	5	16	3 7/16	⅞	...	...	..	13½	1 5/16	2¼	9 7/16	5 7/16	4½	10⅜
3 15/16	4	165.00	110	6¼	17½	...	..	4½	2	¾	14½	1⅛	2¾	10 9/16	5 15/16	5	11½
4 7/16	4½	240.00	140	6¾	19	...	..	4⅝	2¼	¾	16	1⅛	3	11 11/16	6 7/16	5¾	11¾
4 15/16	....	330.00	180	7¼	20½	...	..	5	2½	⅞	17¾	1 5/16	3¼	13	7 7/16	6¼	13⅜

SELECTION TABLE DODGE-TIMKEN DOUBLE INTERLOCK BEARINGS

Table of Radial Load Capacities in Pounds Based on a Minimum of 30,000 Hours of Service

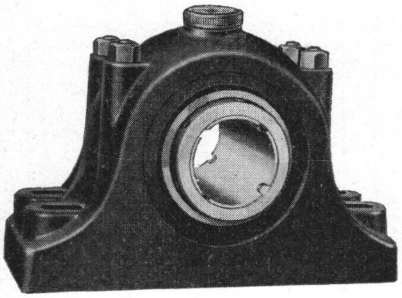
	Revolutions Per Minute										
Shaft size, in.	50	100	250	500	750	1000	1250	1500	2000	2500	3000
1⅜, 1 7/16	1500	1400	1200	1000	890	815	765	720	665	620	580
1½, 1⅝, 1 11/16	2080	1950	1670	1390	1225	1125	1050	1000	915	855	815
1¾, 1 15/16, 2	2700	2520	2160	1800	1590	1460	1360	1300	1185	1110	....
2 3/16	2920	2730	2340	1950	1725	1590	1490	1400	1290	1200	....
2¼, 2 7/16, 2½	3030	2830	2450	2020	1790	1650	1540	1450	1340	....	....
2 11/16, 2 15/16, 3	3330	3100	2660	2220	1975	1810	1700	1600	....	....	....
3 3/16, 3 7/16, 3½	5600	5240	4500	3740	3320	3040	2850	2690	....	....	....
3 15/16, 4	7580	7050	6600	5050	4480	4110	3850	....	....	....	....
4 7/16, 4½	9950	9280	7950	6630	5850	5370	5020	....	....	....	....
4 15/16	13440	12550	10750	8960	7950	7270	....	....	....	....	....

Ratings are for general machinery applications with fairly smooth loads.
For heavy shock loads, extreme vibrations or constantly reversing loads decrease ratings 50%.
Ratings are for bearings mounted on standard cold finished shafting with commercial undersize tolerances.
When mounted on shafts made to special tolerances for snug fits, ratings may be increased. Consult us giving full information on the proposed application.

All above, open stock.

PILLOW BLOCKS

DODGE-TIMKEN SPECIAL DUTY



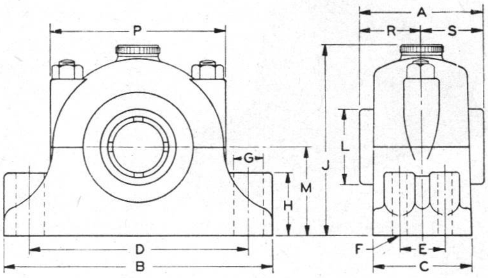
With Special Duplex Timken Tapered Roller Bearing

Inner race carried on a split tapered sleeve with straight cylindrical bore, extending through entire length of housing. Adapter nut or collar clamps adapter sleeve firmly to shaft. Fully self-aligning.

Rugged, well proportioned outer housing, precision machined.

Automotive type piston ring seals effectively retain lubricant and exclude dust and dirt. Dust cap protects lubrication fitting.

Elongated bolt holes provide for lateral adjustment.



Shaft size, in.	Other sizes available, in.	Each	Wt. each, lbs.	A, in.	B, in.	C, in.	D, in.	2-bolt base F-bolt, in.	4-bolt base E, in.	4-bolt base F-Bolt, in.	G, in.	H, in.	J, in.	L, in.	M, in.	P, in.	R, in.	S, in.
1 7/16	1⅜, 1½	$ 47.00	24	4	9	3	7¼	½	....	....	1	2⅛	6 1/16	2 7/16	2⅞	5⅞	1 13/16	2 3/16
1 11/16	1⅝, 1¾	50.00	30	4⅛	9½	3⅜	7¾	½	....	....	1	2⅜	6⅝	2 13/16	3⅛	6½	1⅞	2¼
1 15/16	1⅞, 2	58.00	38	4¼	11	3½	8¾	⅝	....	....	1¼	2½	7	3 1/16	3¼	7⅜	1 15/16	2 5/16
2 3/16	2⅛, 2¼	68.00	52	4 9/16	12	4	9¾	⅝	....	....	1¼	2⅞	7⅞	3 7/16	3¾	8	2 1/16	2½
2 7/16	2⅜, 2½	80.00	64	5 1/16	13¼	4¼	10¾	¾	†2½	⅝	1½	3	8 7/16	3 13/16	4	8⅞	2 5/16	2¾
2 15/16	2⅝, 2 11/16, 2¾, 3	110.00	92	5¾	14¼	4¾	11¾	¾	†2¾	⅝	1½	3¾	9 11/16	4 7/16	4¾	9⅞	2⅝	3⅛
3 7/16	3 3/16, 3⅜, 3½	150.00	130	6⅜	16¾	5½	13¾	⅞	†3¼	¾	1¾	4	11⅛	5 1/16	5½	11⅝	2 15/16	3 7/16
3 15/16	3 11/16, 3¾, 3⅞, 4	275.00	215	8½	19	7	15½	..	3¼	⅞	1¾	4	12 15/16	6¼	6⅜	13⅞	4¼	4¼
4 7/16	4½	375.00	270	9½	20	7½	16½	..	3½	⅞	1¾	4	14½	7¼	7¼	15¼	4¾	4¾
4 15/16	5	500.00	370	10½	23	8¼	18¾	..	3¾	1	2⅛	4¼	15 3/16	8	7½	16¾	5¼	5¼
6	5 1/16 to 6	1000.00	585	12	26¾	9¼	22½	..	5	1⅛	2¼	5	19	9½	9	18¾	6	6
7	6 1/16 to 7	1550.00	1050	13½	34⅜	10¼	29	..	5½	1½	3	6	23	11	11¼	23	6¾	6¾
8	7 1/16 to 8	2000.00	1550	14½	38¾	11¼	32¼	..	6	1¾	3½	7	26	12½	12½	25½	7¼	7¼

Non-Expansion Pillow Blocks will be regularly furnished unless otherwise specified.
†2-Bolt Base regularly furnished. Sizes 2 7/16 in. to 3 7/16 in. inclusive can be furnished with 4-Bolt Base when specified.

SELECTION TABLE DODGE-TIMKEN SPECIAL DUTY BEARINGS

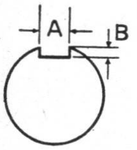
Table of Radial Load Capacities in Pounds Based on a Minimum of 30,000 Hours of Service

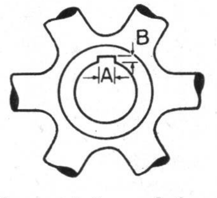
	Revolutions per Minute										
Shaft sizes, in.	50	100	250	500	750	1000	1250	1500	2000	2500	3000
1⅜, 1 7/16, 1½	4500	3640	2770	2250	1990	1820	1710	1620	1490	1390	1310
1⅝, 1 11/16, 1¾	4680	3800	2900	2350	2080	1900	1790	1690	1550	1450	1370
1⅞, 1 15/16, 2	4880	3960	3010	2450	2160	1970	1860	1760	1610	1500	....
2⅛, 2 3/16, 2¼	5240	4250	3220	2620	2320	2120	1990	1890	1740	1610	....
2⅜, 2 7/16, 2½	8020	6500	4930	4000	3550	3260	3050	2890	2650	....	....
2⅝, 2 11/16, 2¾, 2 15/16, 3	11150	9030	6860	5570	4940	4520	4240	4000	....	....	....
3 3/16, 3⅜, 3 7/16, 3½	15100	12300	9320	7580	6700	6150	5760	5450	....	....	....
3 11/16, 3¾, 3 13/16, 3⅞, 3 15/16, 4	21100	17100	13000	10560	9320	8550	8020	....	....	....	....
4 7/16, 4½	23000	18600	14100	11500	10150	9310	8750	....	....	....	....
4 15/16, 5	29900	24200	18400	15000	13250	12150	....	....	....	....	....
5 1/16 to 6	41800	34000	25700	21000	18500	.....	....	....	....	....	....
6 1/16 to 7	45250	36600	27800	22500	20000	.....	....	....	....	....	....
7 1/16 to 8	50600	41000	31100	25250	.....	.....	....	....	....	....	....

Ratings are for general machinery applications with fairly smooth loads. For heavy shock loads, extreme vibrations or constantly reversing loads decrease ratings 50%. Ratings are for bearings mounted on standard cold finished shafting with commercial undersize tolerances.

Open stock.

STANDARD KEYSEAT DIMENSIONS





Standard depth of key-seat is used for all shafts and for pulleys, sheaves, gears and sprockets fitted to shafts.

Shaft size, in.	"A" width, in.	"B" depth, in. Regular	"B" depth, in. Shallow
5/16– 7/16	3/32	3/64	..
½– 9/16	⅛	1/16	..
⅝- ⅞	3/16	3/32	..
15/16– 1¼	¼	⅛	..
1 5/16– 1¾	⅜	3/16	..
1 13/16– 2¼	½	¼	⅛
2 5/16– 2¾	⅝	5/16	3/16
2 13/16– 3¼	¾	⅜	3/16
3 5/16– 3¾	⅞	7/16	¼
3 13/16– 4½	1	½	¼
4 9/16 –5½	1¼	⅝	¼
5 9/16– 6½	1½	¾	¼
6 9/16– 7½	1¾	¾	¼
7 9/16– 9	2	¾	⅜
9 1/16–11	2½	⅞	⅜
11 1/16–13	3	1	⅜

WOODRUFF MACHINE KEYS

No. 1035—SAE Special Carbon Steel

Nos.	Per 100	Size, in.	No. in carton	Wt. per 100, lbs.
211	$0.81	⅜x1/16	100	.09
212	.86	⅜x3/32	100	.13
213	.92	⅜x⅛	100	.17
1	.22	½x1/16	100	.13
2	.25	½x3/32	100	.22
3	.29	½x⅛	100	.26
4	.33	⅝x3/32	100	.32
5	.42	⅝x⅛	100	.41
6	.53	⅝x5/32	100	.50
61	.64	⅝x3/16	100	.60
7	.51	¾x⅛	100	.60
8	.62	¾x5/32	100	.78
9	.70	¾x3/16	100	.94
91	.95	¾x¼	100	1.25
10	.89	⅞x5/32	100	1.13
11	1.01	⅞x3/16	100	1.35
12	1.14	⅞x7/32	100	1.57
A	1.29	⅞x¼	100	1.82
13	1.27	1 x3/16	100	1.82
14	1.50	1 x7/32	100	2.09
15	1.65	1 x¼	100	2.32
B	1.96	1 x5/16	100	2.88

Manufacturers' Standard List

Nos.	Per 100	Size, in.	No. in carton	Wt. per 100, lbs.
16	$1.52	1⅛x3/16	100	2.19
17	1.76	1⅛x7/32	100	2.60
18	2.06	1⅛x¼	100	3.00
C	2.49	1⅛x5/16	100	3.63
19	1.94	1¼x3/16	100	2.84
20	2.24	1¼x7/32	100	3.32
21	2.49	1¼x¼	100	3.63
D	2.97	1¼x5/16	100	4.63
E	3.45	1¼x⅜	100	5.50
22	2.97	1⅜x¼	100	4.38
23	3.45	1⅜x5/16	100	5.44
F	3.87	1⅜x⅜	50	6.63
24	3.39	1½x¼	100	5.19
G	4.84	1½x⅜	50	7.63
126	1.94	2⅛x3/16	100	2.50
127	2.42	2⅛x¼	100	3.25
129	3.33	2⅛x⅜	100	4.75
26	2.73	2⅛x3/16	100	3.63
28	4.42	2⅛x5/16	50	6.10
29	5.08	2⅛x⅜	50	7.44
31	13.79	3½x7/16	25	25.32
32	14.95	3½x½	25	28.88

SHAFT COLLARS

DODGE SAFETY SET

Solid Steel

Made particularly for the machinery builder and other users where accuracy and appearance are of prime importance.

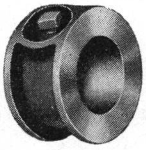
Finished all over, and occupies a minimum space on the shaft.

All sizes have hollow head set screws.

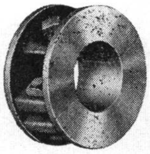
Shaft size, in.	Each	Diam., in.	Width, in.	Set screw, in.	Wt. each, lbs.
½	$0.40	1	7/16	¼	.07
⅝	.50	1⅛	½	¼	.10
¾	.55	1⅜	9/16	5/16	.17
⅞	.65	1½	9/16	5/16	.18
15/16	.70	1⅝	9/16	5/16	.22
1	.75	1⅝	⅝	5/16	.23
1 1/16	.95	1¾	⅝	5/16	.27
1⅛	1.00	1¾	⅝	5/16	.25
1 3/16	1.10	2	11/16	⅜	.40
1¼	1.15	2	11/16	⅜	.37
1 5/16	1.20	2⅛	11/16	⅜	.43
1⅜	1.25	2⅛	¾	⅜	.44
1 7/16	1.30	2¼	¾	⅜	.50
1½	1.35	2¼	¾	⅜	.47
1 9/16	1.65	2½	13/16	⅜	.69
1⅝	1.70	2½	13/16	⅜	.65
1 11/16	1.75	2½	13/16	⅜	.62
1¾	2.15	2¾	⅞	⅜	.88
1⅞	2.25	2¾	⅞	⅜	.79
1 15/16	2.30	3	⅞	½	1.02
2	2.35	3	⅞	½	.97
2 3/16	2.60	3¼	15/16	½	1.21
2¼	2.65	3¼	15/16	½	1.14
2 7/16	3.20	3½	1	½	1.39
2 15/16	4.85	4¼	1⅛	⅝	2.35

Note—Wrenches will be furnished at an extra **cost.**

Iron



Solid



Split

These collars are cast iron, of the heavy duty type. They are bored, finished on the periphery and faced on both ends. Sizes 3 3/16 in. larger have two square head set screws; smaller sizes have one set screw.

Special wrenches are not required.

Solid

Shaft size, in.	Each	Diam., in.	Width, in.	Wt. each, lbs.
1 15/16	$1.40	3⅜	1½	1.5
2	1.45	3⅜	1½	1.5
2 3/16	1.60	4	1⅞	2.8
2 7/16	1.80	4¼	1⅞	3.0
2½	1.88	4¼	1⅞	3.0
2 11/16	2.10	4½	1⅞	3.2
2 15/16	2.40	4¾	1⅞	3.5
3 3/16	2.70	5 3/16	2	5.0
3 7/16	3.00	5 7/16	2	5.0
3 15/16	3.60	6 3/16	2¼	7.2
4 7/16	4.70	7⅝	3¼	14.0
4 15/16	5.90	8⅛	3¼	16.3
5 7/16	7.20	8⅝	3¼	17.5
5 15/16	8.60	9⅛	3¼	17.0

Note

Solid iron collars are not made smaller than 1 15/16 in.

Split

Shaft size, in.	Each	Diam., in.	Width, in.	Wt. each, lbs.
1⅛	$1.50	3	1½	1.0
1 3/16	1.50	3	1½	1.0
1¼	1.50	3	1½	1.0
1 5/16	1.50	3¼	1½	1.3
1 7/16	1.50	3¼	1½	1.2
1½	1.60	3¼	1½	1.2
1 11/16	1.80	3½	1½	1.5
1¾	1.90	3½	1½	1.5
1 15/16	2.10	3¾	1½	2.0
2	2.20	3¾	1½	2.0
2 3/16	2.40	4½	1⅞	3.4
2¼	2.50	4½	1⅞	3.4
2 7/16	2.70	4⅞	1⅞	3.7
2½	2.80	4⅞	1⅞	3.7
2 11/16	3.15	5⅛	1⅞	4.0
2 15/16	3.60	5½	1⅞	4.5
3	3.75	5½	1⅞	4.4
3 3/16	4.05	5¾	2	5.0
3 7/16	4.50	6	2	5.5
3 11/16	4.95	6⅝	2¼	8.5
3 15/16	5.40	7	2¼	9.0
4 7/16	7.05	8	3¼	18.5
4 15/16	8.85	8½	3¼	20.0
5 7/16	10.80	9	3¼	24.0
5 15/16	12.90	9½	3¼	25.5

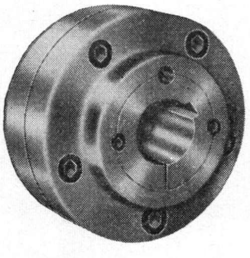
Note

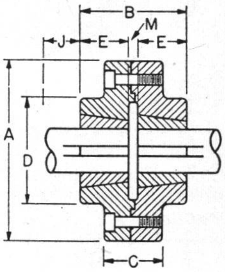
Split iron collars are not made smaller than 1⅛ in.

Note—Larger sizes of solid and split iron collars are available; prices on request.

SHAFT COUPLINGS

DODGE "TAPER-LOCK", RIGID





Taper-Lock Rigid Couplings provide a convenient means for rigidly connecting the ends of shafts. Taper-Lock bushings permit easy fastening to shafting with the firmness of a shrunk-on fit. This advanced type of coupling replaces the older types of couplings such as compression, ribbed and smaller sizes of flange couplings. Couplings have a male and female joint and are machined all over. They are furnished with Taper-Lock bushings in various bores by increments of 1/16 in.

Coupling, Nos.	Bore	Coupling Complete		Parts when ordered separately								
				Bushings			Flanges		Flange Screws			
		Each	Wt., lbs.	Nos.	Each	Wt., lbs.	Each	Wt., lbs.	Per set	Wt., lbs.	Qty.	Size, in.
R16		$ 21.00	10	**1615**	$ 3.00	.8	$ 7.00	4.1	$ 1.00	.2	4	⅜x1¼
R25		27.00	24	**2517**	4.00	2.2	8.50	9.5	2.00	.6	5	½x1½
R30	See	60.00	55	**3030**	7.50	7.0	21.00	20	3.00	1.3	6	⅝x1⅞
R35	Table	100.00	86	**3535**	12.00	10	36.00	32	4.00	1.6	6	⅝x2⅜
R40	Below	135.00	140	**4040**	16.00	15	49.00	54	5.00	2.2	6	¾x2¼
R45		180.00	203	**4545**	20.00	24	66.00	76	8.00	3.4	6	⅞x2½
R50		220.00	260	**5050**	35.00	28	70.00	100	10.00	4.3	7	⅞x2¾

‡In ordering separate flanges specify whether male or female flanges are required.

Left hand flange in line drawing is male flange. Either flange can be fitted to either shaft, even where shafts of different diameter are coupled together.

Coupling Dimensions

Coupling, Nos.	Bushing Data				A, in.	B, in.	C, in.	D, in.	E, in.	▲J, in.	†M, in.
	Bushing, Nos.	*Max. bore, in.		Min. bore, in.							
		Normal service	Severe service								
R16	1615	1⅝	1 5/16	½	5	3¼	1⅝	3¼	1½	1¼	¼
R25	2517	2½	2	½	7	3¾	2	4¾	1¾	1½	¼
R30	3030	3	2½	15/16	8½	6¼	2½	5¾	3	1⅞	¼
R35	3535	3½	2¾	1 3/16	9¾	7¼	2⅞	7	3½	2½	¼
R40	4040	4	3¼	1 7/16	11¾	8¼	3	8½	4	3	¼
R45	4545	4½	3¾	1 15/16	13	9¼	3⅜	9½	4½	3½	¼
R50	5050	5	4	2 15/16	14¼	10¼	3⅝	10½	5	3⅞	¼

▲ J is the wrench clearance for tightening or loosening bushing on shaft. This clearance is not required on other end of coupling.

† M is the distance between shafts.

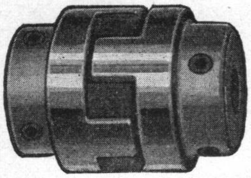
* Normal Service includes all normal loads that may be transmitted by mild steel shafting. Severe Service includes either heavy shock loads or the use of alloy steel shafts.

All above, open stock.

SHAFT COUPLINGS

L-R FLEXIBLE

Type A



Dampens and absorbs shock, vibration, starting torque, and intermittent overloads. It protects both motor and driven machinery, adding materially to the life of their bearings. Its extreme simplicity of construction cuts assembling costs to the minimum and eliminates the need for constant adjusting and servicing. It makes shaft alignment easy. **It needs no lubrication at any time.**

It transmits the load by compression of resilient wear-resisting material.

The load is so distributed that the specific pressure is kept far below the safe maximum.

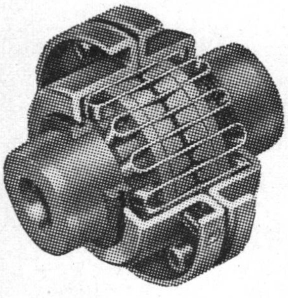
The Spiders or load-cushions are made of material used to the load conditions; either rubber, leather, felt, rubber-duck or brake lining material as needed. These spiders or load-cushions take up all the wear—they are always in sight for inspection and easily and quickly replaced. There is no wear on the metal jaws and the bodies are practically everlasting.

Nos.	Max. bore, in.	Complete Coupling, each	Spider Only, each	One Body Only, each	Max. HP at 1750 RPM	Max. HP at 100 RPM	Outs. diam., in.	Length over all, in.	Distance between shaft, in.	Gap between jaw and body, in.	Wt. each, lbs.
A-050	½	$ 0.75	$0.20	$0.30	⅙	...	1 3/32	1⅝	½	1/16	¼
A-050X	½	.85	.20	.34	⅙	...	1 3/32	2⅜	½	1/16	⅜
AU-050X	½	1.35	.20	.34	⅙	...	1 3/32	3⅜	½	1/16	⅝
A-070	⅝	1.30	.36	.50	⅓	...	1⅜	1 15/16	½	1/16	½
A-090	¾	2.40	.96	.80	1½	...	2⅛	2¼	½	3/32	1½
A-095	⅞	4.50	.96	1.80	2½	...	2⅛	2½	½	3/32	2
A-100	1¼	7.50	1.80	3.00	7½	...	2 9/16	3½	11/16	3/32	3½
A-150	1⅝	13.30	3.60	5.32	20	1.5	3¾	4½	1	⅛	7
A-190	2	20.00	6.00	8.00	30	2.5	4½	5¼	1	⅛	17

Center Unit Only—For No. AU-050X long coupling ....Each $0.30

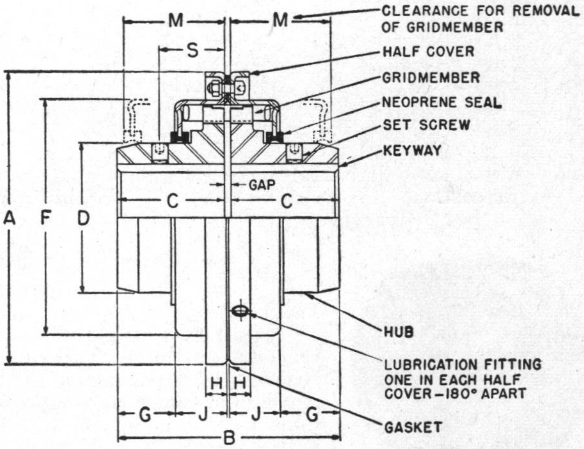
FALK STEELFLEX

Type F



Type F Flexible Couplings are designed for direct connected drives. They are compact, well balanced and equally effective at high or low speeds in absorbing vibration and in cushioning shock loads. In addition they allow free end float at all loads without binding and will operate in parallel or angular misalignment.

These units are made entirely of steel, enclosed by two covers bolted together so as to be free from dangerous projections.


M
M
S
CLEARANCE FOR REMOVAL OF GRIDMEMBER
HALF COVER
GRIDMEMBER
NEOPRENE SEAL
SET SCREW
KEYWAY
GAP
C
C
A
F
D
HUB
LUBRICATION FITTING ONE IN EACH HALF COVER–180° APART
H
H
G
J
J
G
B
GASKET

Construction Features

1—Resilient Grid Member; shock loads reduced; vibration dampened.

2—New Ease of Alignment; unnecessary to turn either the driving or driven shafts when aligning.

3—Misalignment Flexibility; compensates for angular or parallel shaft misalignment without placing harmful loads on the connecting shafts or their bearings.

4—Floating Cover; floats on top of the raised portion of the hub teeth.

5—Seal Rings; openings between the cover and the hubs are sealed with Neoprene rings.

6—Identical Parts; both hubs and both cover halves are identical.

7—Lubrication; grease fittings facilitate the application of non-fluid lubrication.

Nos.	Rough Bore, each	Max. speed, RPM	Basic rating	Max. bore, in.	*Min. bore, in.	Dimensions, in. A	B	C	D	F	G	H	J	M	S	Gap, in. Min.	Normal	Max.	App. wt. ea., lbs.
3F	$ 12.40	6000	0.4	1	7/16	3¾	3⅜	1⅝	1 9/16	2 19/32	51/64	9/16	⅞	1 11/16	1⅛	1/16	⅛	5/32	3.6
4F	14.85	6000	0.9	1¼	⅝	4 1/16	4⅜	2⅛	1 13/16	2 29/32	1 3/64	9/16	1⅛	2 3/16	1⅜	1/16	⅛	3/16	5.7
5F	17.15	6000	1.5	1 7/16	⅝	4½	4⅜	2⅛	2⅛	3 11/32	1 3/64	9/16	1⅛	2 3/16	1⅜	1/16	⅛	3/16	7.5
6F	22.00	6000	2	1⅝	23/32	5	4⅜	2⅛	2 19/32	3 27/32	1 3/64	9/16	1⅛	2 3/16	1⅜	1/16	⅛	3/16	10
7F	29.05	6000	4	1⅞	27/32	5⅝	4⅜	2⅛	2 15/16	4 15/32	1 3/64	9/16	1⅛	2 3/16	1⅜	1/16	⅛	3/16	14
8F	42.90	5000	8	2⅜	27/32	7⅛	6⅛	3	3⅝	5 9/32	1 17/32	19/32	1 33/64	3	1 13/16	1/16	⅛	¼	28
9F	56.65	4500	12	2⅝	1.24	7⅝	6⅝	3¼	3 13/16	5 25/32	1 25/32	19/32	1 33/64	3	1 13/16	1/16	⅛	¼	33
10F	66.20	3750	16	2⅞	1.49	8¼	7 11/16	3¾	4½	6 13/32	1 15/16	19/32	1 57/64	3¾	2¼	1/16	3/16	⅜	49
11F	82.80	3400	23	3¼	1.49	8 29/32	7 11/16	3¾	4 15/16	7 1/16	1 59/64	⅝	1 29/32	3¾	2¼	1/16	3/16	⅜	60
12F	103.00	3000	35	3½	1.99	9 11/16	7 15/16	3⅞	5⅜	7 13/16	2 1/64	11/16	1 15/16	3¾	...	1/16	3/16	⅜	75
13F	116.65	2700	48	4	1.99	10 15/16	7 15/16	3⅞	6⅛	9 1/16	2 1/64	11/16	1 15/16	3¾	...	1/16	3/16	⅜	97

*Nos. 9F through 13F have keyways in minimum bore.

Dimensions B, G and M are based on normal gap.

Clearance M for cover to allow installation or removal of gridmember must be available.

Note—Larger size couplings available on request.

Note—See next page for selection table.

All above, open stock.

SHAFT COUPLINGS

SELECTION TABLE FOR TYPE F FALK STEELFLEX COUPLINGS

LOAD CLASSIFICATION TABLE

Agitators	
Paddle, Propeller or Screw	A
Blowers (see Compressors and Fans)	
Brewing & Distilling	
Bottling Machinery	A
Brew Kettle	A
Car Dumper	C
Car Puller	C
Clay Working Machines	C
Compressors—Rotary	B
Conveyors	
Apron—Assembly—Belt	A
Chain—Flight—Oven	A
Cranes and Hoists	
Main Hoist—Medium Duty	C
Main Hoist—Heavy Duty	D
Skip Hoist	C
Crushers—Cane	C
Dynamometer	A
Elevator	D
Exciter	A
Fans	
Centrifugal	A
Cooling Tower	D
Induced Draft	
Light	A
Propeller (Indoor)	B
Food Industry	
Beet Slicer—Dough Mixer	C
Meat Grinder	C
Generators	
Even Load	A
Welder Load	D
Hoists (See Cranes)	
Kiln	D
Laundry Machines—Tumbler-Washer	D
Line Shafts—Light	A
Lumber Industry	
Band Resaw	B
Circular Resaw	C
Edger—Head Rig—Hog	D
Log Haul	D
Planer	C
Slab Conveyor	C
Sorting Table	B
Machine Tools	
Auxiliary	A
Main Drive	B
Planer—Punch Press	C
Mixers	
Concrete—continuous	C
Muller—Simpson Type	B
Oil Well Pumping	
Not over 150% peak torque	D
Paper Mills	
Beater—Calender—Couch	C
Cylinder—Press	C
Jordan—Pulp Grinder	D
Propeller—Marine	C
Pulverizers	
Hammermill	C
Hog	D
Roller	B
Pumps	
Centrifugal	A
Gear and Rotary Type	B
Reciprocating	
1 or 2 cylinder—single acting	D
2 cylinder—double acting	C
3 cylinder or more	B
Rubber Industry	
Calender—Refiner—Sheeter	D
Tuber and Strainer	C
Shovel	D
Shredder	C
Stoker	A
Textile Mills	
Calender—Card—Dry Can	B
Spinner—Tenter Frame	B
Windlass	B
Woodworking Machinery—Millwork	A

Determine load classification for your application in left hand column. Note carefully the letter designation opposite. Using the corresponding table below (A, B, C or D) find the required horsepower. Then trace downward to the selection opposite the RPM at which the coupling is to operate. This is correct coupling size. Check bore requirements with maximum bore of coupling size selected, as shown on preceding page. Use larger size if necessary to obtain required bores.

Selections on this page are for Motor and Turbine Drives.

Type F Coupling Sizes

A

	Horsepower																
RPM	¾	1	1½	2	3	5	7½	10	15	20	25	30	40	50	60	75	100
3500	3	3	3	3	3	3	4	4	5	5	6	6	7	7	7	8	8
1750	3	3	3	3	3	4	4	5	6	7	7	7	8	8	8	8	9
1430	3	3	3	3	3	4	5	5	6	7	7	7	8	8	8	9	10
1170	3	3	3	3	4	4	5	5	7	7	7	8	8	8	9	9	10
860	3	3	3	3	4	5	5	6	7	7	8	8	8	9	9	10	11
680	3	3	3	4	4	5	6	7	7	8	8	8	9	9	10	11	11

B

	Horsepower																
RPM	¾	1	1½	2	3	5	7½	10	15	20	25	30	40	50	60	75	100
3500	3	3	3	3	3	4	4	4	5	6	7	7	7	8	8	8	9
1750	3	3	3	3	4	4	5	5	7	7	7	8	8	8	9	9	10
1430	3	3	3	3	4	4	5	6	7	7	8	8	8	9	9	10	11
1170	3	3	3	3	4	5	5	6	7	7	8	8	8	9	9	10	11
860	3	3	3	4	4	5	6	7	7	8	8	8	9	10	10	11	12
680	3	3	4	4	4	5	7	7	8	8	8	9	9	10	11	11	12

C

	Horsepower																
RPM	¾	1	1½	2	3	5	7½	10	15	20	25	30	40	50	60	75	100
3500	3	3	3	3	3	4	4	5	6	7	7	7	8	8	8	8	9
1750	3	3	3	3	4	4	5	6	7	7	8	8	8	9	9	10	11
1430	3	3	3	4	4	5	6	7	7	8	8	8	9	9	10	10	11
1170	3	3	3	4	4	5	6	7	7	8	8	8	9	10	10	11	12
860	3	3	4	4	5	6	7	7	8	8	8	9	10	10	11	12	12
680	3	3	4	4	5	6	7	7	8	8	9	9	10	11	11	12	13

D

	Horsepower																
RPM	¾	1	1½	2	3	5	7½	10	15	20	25	30	40	50	60	75	100
3500	3	3	3	3	3	4	5	5	6	7	7	7	8	8	8	9	10
1750	3	3	3	4	4	5	6	7	7	8	8	8	9	9	10	10	11
1430	3	3	3	4	4	5	6	7	7	8	8	8	9	10	10	11	12
1170	3	3	4	4	4	5	7	7	8	8	8	9	9	10	11	11	12
860	3	3	4	4	5	6	7	7	8	8	9	9	10	11	11	12	13
680	3	4	4	4	5	7	7	8	8	9	9	10	11	11	12	12	13

DETACHABLE LINK CHAIN

MALLEABLE IRON

The links are detachable and are made of the highest grade of malleable iron, certified for its high tensile strength and ductility.

These chains are interchangeable with other standard makes with corresponding numbers.

Standard Sizes

Nos.	Plain Chain, per ft.	Approx. links in 10 ft.	Average pitch, in.	Average ultimate strength, lbs.	Aver. wt. per 10 ft., lbs. Chain	Aver. wt. per 10 ft., lbs. Cplrs.
25	$0.51	133	.902	700	2.4	3.3
32	.51	104	1.154	1100	3.5	5.5
33	.48	86	1.394	1200	3.3	5.4
34	.54	86	1.398	1300	4.0	5.7
42	.57	88	1.375	1600	5.5	8.4
45	.54	74	1.630	1700	5.2	7.8
50	...	87	1.380	1900	7.1	10.5
51	.66	104	1.155	1900	7.0	9.4
*S-51	.96	105	1.136	1900	7.6	...
52	.69	80	1.506	2300	8.0	12.0
55	.60	74	1.631	2300	7.2	10.7
57	.78	52	2.308	2900	8.6	12.4
62	.81	73	1.654	3200	10.6	14.6
67	.90	52	2.308	3400	11.5	15.6
75	.99	46	2.609	4100	13.4	17.3
77	1.05	52	2.297	3600	14.5	18.9
78	.88	46	2.609	5500	18.8	25.1
88	1.00	46	2.609	6400	24.0	29.9
95	1.44	30	3.967	9000	30.0	42.0
103	1.46	39	3.075	10000	40.0	52.7
108	1.60	25½	4.720	10000	36.0	49.9
114	1.84	37	3.250	12000	53.0	71.6
124	2.16	30	4.063	17000	66.0	87.0

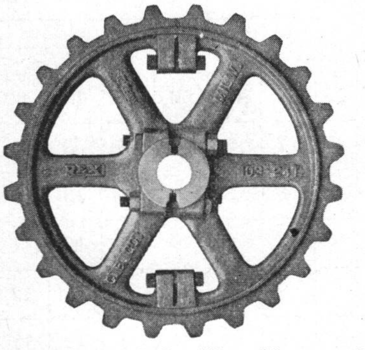
*Has wearing heel.

ATTACHMENTS

Literature showing illustrations, description and prices on request.

SPROCKET WHEELS

FOR DETACHABLE LINK CHAIN



A chain should entirely encircle the wheel to reach a coupling position.

Chain will frequently run on sprocket wheels which do not fit them. To insure durability and maximum service of both chain and wheel, they must fit. A sprocket wheel with hardened face that does not fit the chain, lasts, but at the expense of the chain. The chain is the standard and the sprocket wheel must be made to fit it.

Where it is necessary to run a wheel in contact with the face side of the chain (the side on which the coupling hook is open) use face wheels. Split wheels are a great convenience where it is not easy to remove the shaft.

Suggestions for Ordering Wheels

In ordering, mention (1) quantity of wheels of each kind wanted. (2) Metal. (3) pitch diameter. (4) number of teeth (counted as a check on the diameter) (5) No. of chain used. (6) diameter of bore.

If casting only is wanted state diameter and shape of shaft for which it is to be bored.

If wheel is to be bored, state whether keyseated or set-screwed. If keyseat is wanted, specify whether straight or taper and whether in line with another wheel. If keyseat is not standard size give width and depth.

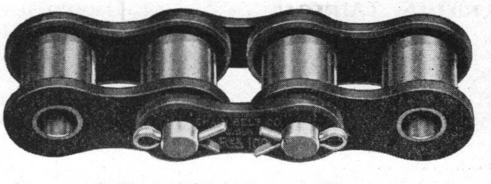
Wheels furnished plain or solid unless split wheels are specified. When full strength of chain is required plate center wheels should be specified.

If hub is special, send sketch with particulars, such as diameter, length, projection from center on either or both sides, indicating whether faced at both ends or one (and which one).

Prices on Request

ROLLER CHAIN

SINGLE WIDTH



Manufacturers' Standard Series

Roller chains should be used within their proper range of application, so as to give the maximum service per dollar of investment. They carry heavy loads at moderate chain speeds and are durable and efficient on second reduction drives and similar applications.

The following chains, which are in accordance with manufacturer's standards, are well proportioned for strength and durability.

Chain Nos.	Plain Per foot Cottered	Plain Per foot Riveted	Parts Connecting link, each	Parts Roller link, each	Parts Offset link, each	Aver. ultimate str'gth, lbs.	Pitch	Wt. per foot, lbs.
35	$ *	$0.90	$0.14	$0.10	$0.32	2100	⅜	.22
40	*	1.15	.14	.10	.40	3700	½	.41
50	*	1.40	.16	.12	.46	6100	⅝	.68
60	2.20	1.80	.20	.16	.58	8500	¾	.96
80	3.36	2.96	.32	.40	1.00	14500	1	1.7
100	4.52	4.12	.48	.68	1.42	24000	1¼	2.7
120	5.68	5.28	.72	1.00	1.84	34000	1½	4.0
140	6.84	6.44	1.02	1.40	2.26	46000	1¾	5.2
160	8.00	7.60	1.36	1.90	2.70	58000	2	6.8
180	13.40	13.00	2.60	3.56	4.90	80000	2¼	9.4
200	16.40	16.00	3.50	4.90	6.40	95000	2½	10.8

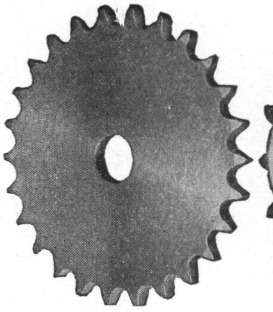
*Made riveted type only. Larger sizes furnished Cottered (detachable) unless riveted chain is ordered.

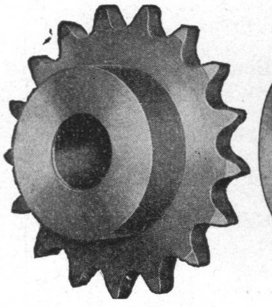
MULTIPLE WIDTH

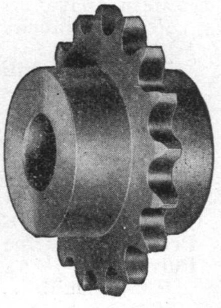
Multiple width roller chains, which are known as double, triple and quadruple widths, can be furnished. Multiple width chains can be used to advantage where speeds and loads are high. Their increased strength permits the use of shorter pitch chain, and more teeth in sprockets without increase in diameter. Multiple width chains are built upon a single pin, and are usually manufactured in the detachable type, but will be furnished riveted if so desired.

ROLLER CHAIN SPROCKET WHEELS

CUT TOOTH


Type A


Type B


Type C

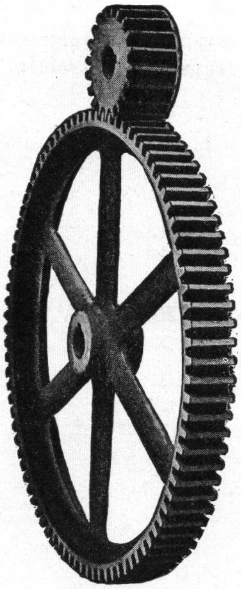
Type A is a plate wheel. Bolt holes and bores can be made to suit specifications. Can be made split if so desired. Type B sprocket wheel has a hub on one side, and can be made in cast iron or cast steel. Type C sprocket wheel has hub on both sides. This type of wheel can be made split if desired.

When sending specifications for sprocket wheels, the following information is necessary:

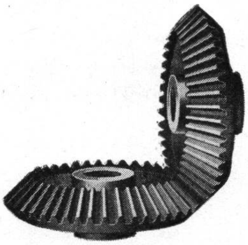
(1) Quantity. (2) Material. (3) Type of Sprocket. (4) Solid or split. (5) No. of teeth. (6) No. of chain, pitch of chain, diameter and width of roller. (7) Bore. (8) Length of hub through bore. (9) Length of hub projection from center line, if hubs are offset. (10) Maximum hub diameter, if space is limited. (11) Keyseated or setscrewed. If Keyseated, whether straight or tapered. Give width and depth of keyseat. In case of taper keyseat where hub is not located centrally, specify from which end tapered. (12) Bolt hole specifications for plate sprocket.

Prices on Request

CAST IRON GEARS



Spur Gears



Bevel Gears

In ordering spur gears, be particular to state the number of teeth, pitch, face and bore of gear, also whether desired key-seated or set-screwed.

In ordering bevel gears, be particular to state the number of teeth, pitch, face and bore of both the wheel and the pinion.

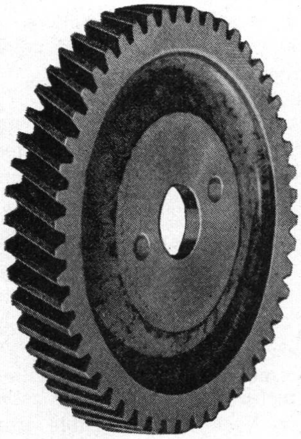
Also state the backing or the projection of the hub back of the pitch line, and whether desired key-seated or set-screwed.

We can also furnish gears of cast steel, manganese steel, bronze, rawhide and other materials, with machine cut teeth.

Prices on Request

SILENT INDUSTRIAL GEARS

COLORADO MICARTA



Micarta is a product developed especially for making quiet gears. It has a number of properties which make it more desirable for silent gears than other non-metallic materials.

- Strengths
- Long life
- Resilience
- Light weight
- Homogeneous nature
- Resistance to heat
- Resistance to water and oil
- Good machining and punching properties.
- Freedom from deterioration by age, vermin, or rodents

It is self-supporting. No shrouds are required for the teeth and in most cases, no end plates whatever are necessary. This property permits the making of many special designs which would not be possible with other non-metallic material.

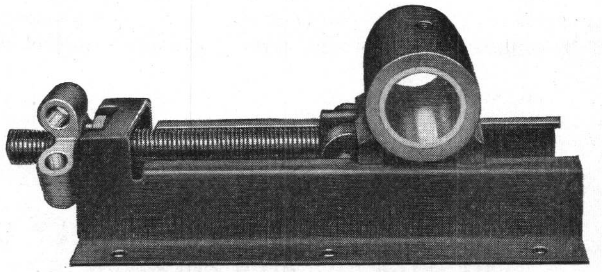
Any type of gear may be cut from Micarta. Spur, helical, herringbone, and bevel gears and worm wheels are giving excellent results wherever applied.

The durability of Micarta Gears has been proven in many severe applications. Even in cement mills, where cement dust rapidly cuts steel gearing, Micarta Gears have given unusual satisfaction. Micarta Gears may be used wherever metal gears have been successfully employed. Gears of this material have given first class service in such severe applications as bridge, crane motors and power pumps.

Special Bulletin and Prices on Request

TAKE-UPS

PRESSED STEEL



Style A—Bearing arranged for shaft perpendicular to base.

Style B—Bearing arranged for shaft parallel to base.

Pressed Steel Take-Ups are well suited for use on either wood or steel supports. They are designed for moderate load capacity.

The frame is compact in design and the accurately die formed, welded steel construction adds strength and rigidity. It is capable of withstanding the strains of conveyor, elevator and general take-up service.

The bearings are babbitted and faced on ends and are tapped for grease cups or pressure fittings.

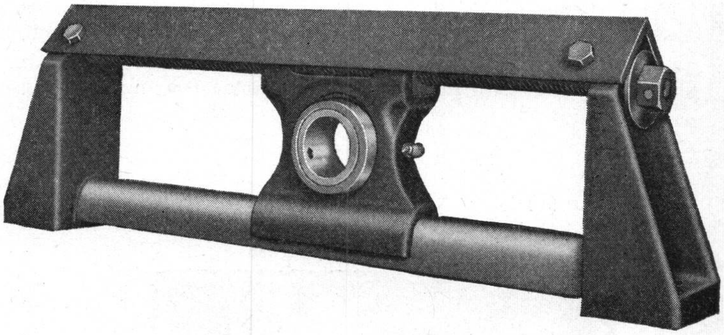
Positive adjustment of Take-Up is effected by turning the capstan head which is made of bronze to prevent corrosion. The screws are plated to prevent rust.

The Steel Frame Take-Up is equally strong in tension and compression.

The bearing is lined with a good grade of babbitt. Ends are faced, and tapped holes provided for grease cups.

Complete Specifications and Prices on Request

BALL BEARING



Fully self-aligning and equipped with deep groove precision ball bearings having a long inner race. Bearings are effectively sealed to retain lubricant and exclude dust and dirt.

Positive adjustment of take-up is effected by turning screw head at either end of the take-up. Adjusting screws are plated and the angle top member protects screw from dust and dirt.

Note—Also available with babbitted anti-friction bearings.

Complete Specifications and Prices on Request

GRAVITY TYPE

Gravity Take-Ups are available. Literature and prices will be furnished at your request.

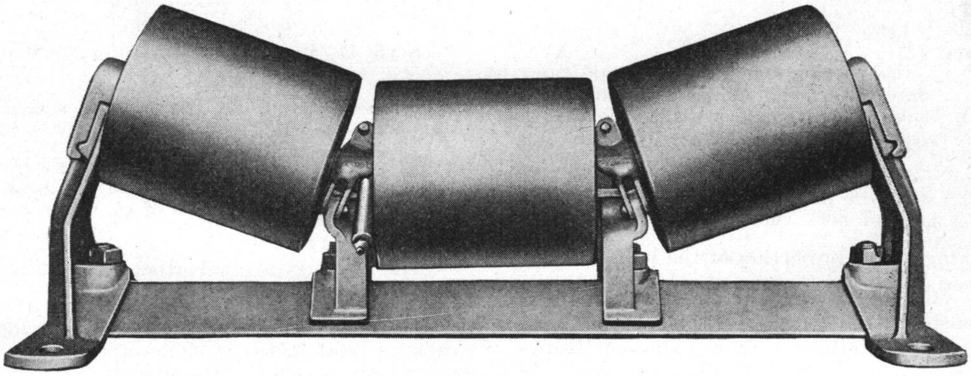
WEBSTER BELT CONVEYOR EQUIPMENT

Webster Mfg., Inc. of Tiffin, Ohio are leading manufacturers of complete mine tipples, conveying and transmission equipment, coal crushers, automatic power shovels, etc. They maintain an engineering staff to assist with conveying and transmission problems, and if you so desire, we can offer Webster equipment completely engineered and installed by Webster.

The following pages describe Webster belt conveyor rolls and pulleys. We also can supply Webster pillow block bearings, take-ups, chain and sprockets, flat belt pulleys, etc.

BELT CONVEYOR ROLLS

WEBSTER "32" TYPE STANDARD DUTY ROLLER BEARING TROUGHING AND RETURN IDLERS

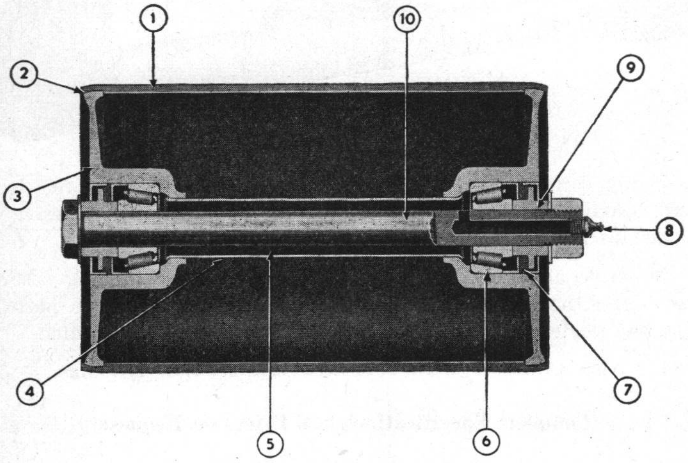


General Design

Webster Belt Conveyor Idlers embody the finest design, material and workmanship possible, and it is only after a great many years of successful belt conveyor installations that we can substantiate such a statement. The entire line of Webster idlers operate with the utmost efficiency and with the lowest possible power and maintenance requirements, thereby minimizing the initial and final costs of the conveyor.

The rolls are mounted in a manner permitting easy removal, **as a unit,** from the rigid malleable iron supporting brackets. A substantial and self-cleaning steel base is used to support the brackets, assuring perfect and permanent roll alignment. Slotted holes are a standard feature in the end brackets to facilitate erection and permit alignment on the supporting conveyor framework.

Bearings are of the oversize Timken tapered roller type, assuring unfailing service under the most adverse conditions of overloading and material handling. All bearings are positively lubricated by means of high pressure grease fittings conveniently located and can also be furnished with one side lubrication at a slight additional cost. Positive grease retention is obtained through a combination of labyrinth and felt seals, insuring bearing and belt protection.



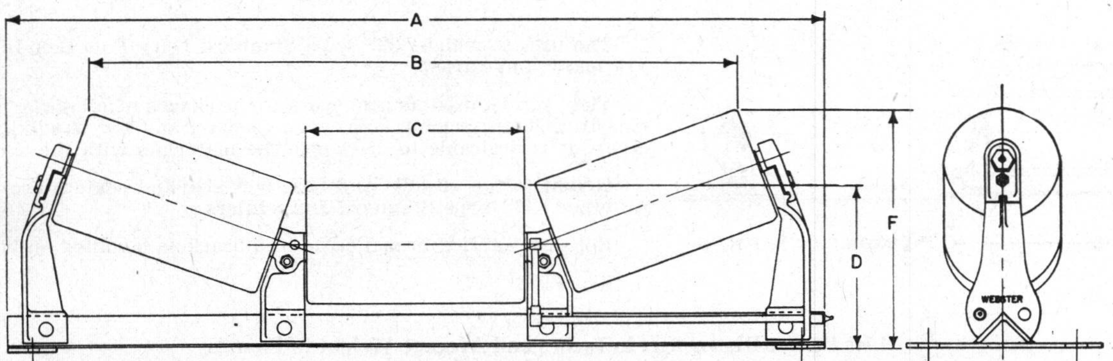
The Roll

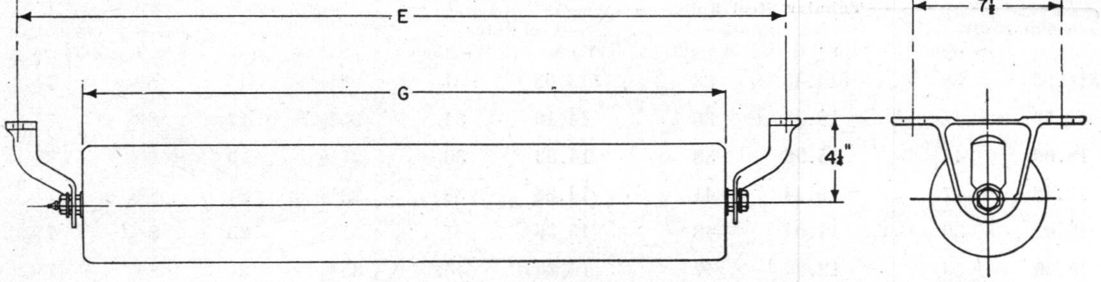
1. Balanced Tubular Steel Roll. One piece cast iron chilled face roll. Can be furnished in 6″ diameter and 5″ diameter rolls.
2. Rounded edges provide positive lock for malleable iron ends and protect belt.
3. Malleable iron ends keep bearings in perfect alignment and are designed to deflect dust and dirt from bearing.
4. Strong steel tube adds strength.
5. Inner grease reservoir provided by steel tube.
6. Timken tapered roller type bearings with hardened inner and outer races. Ball bearings can be furnished if desired.
7. Labyrinth metal and felt grease seal.
8. Conveniently located hydraulic grease fitting.
9. Malleable iron closure assuring proper bearing clearances by means of adjusting nut.
10. Accurately machined roll shaft of ample size.

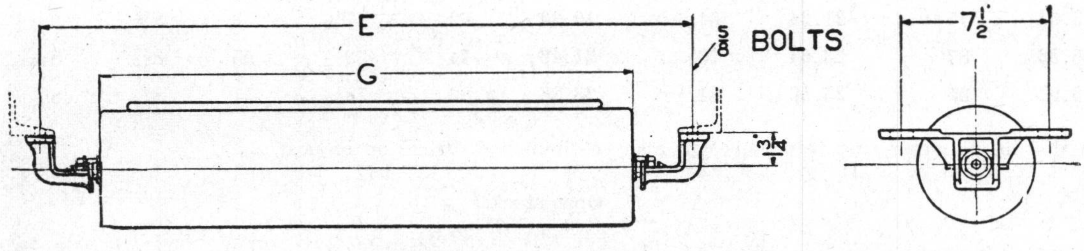
Webster Idlers are strong, durable, well balanced and pleasing in appearance; each type giving outstanding performance for **a specific material handled, whether it be for the lightest or most severe duty imposed. "Quality" is the keyword for Webster Idlers** and under no consideration is this sacrificed.

BELT CONVEYOR ROLLS

WEBSTER "32" TYPE STANDARD DUTY ROLLER BEARING TROUGHING AND RETURN IDLERS







These idlers are designed to operate under normal conditions, handling most kinds of materials. They are economical, efficient, and have a low maintenance cost.

Rounded edges on the return idler pulleys and ample room between edges of belt and hangers protect the belt from injury. Rolls are held in perfect alignment by rigid substantial malleable iron brackets.

*List Prices Each and Average Weight Each in Pounds

Belt width, in.	Troughing Idlers 6 in. Diam. Rolls Steel Each	Wt.	Cast Iron Each	Wt.	Troughing Idlers 5 in. Diam. Rolls Steel Each	Wt.	Cast Iron Each	Wt.	Troughing Idlers 4 in. Diam. Rolls Steel Each	Wt.	Return Idlers 6 in. Diam. Rolls Steel Each	Wt.	Return Idlers 5 in. Diam. Rolls Steel Each	Wt.	Return Idlers 4 in. Diam. Rolls Steel Each	Wt.
12	$30.96	63	$34.32	80	$25.92	52	$31.80	66	$24.12	36	$13.44	32	$11.40	24	$10.20	20
14	31.44	65	34.80	82	26.40	54	32.28	70	24.48	39	13.92	35	11.88	25	10.56	21
16	31.92	67	35.28	84	26.88	56	32.76	75	24.84	42	14.40	38	12.36	26	10.92	23
18	32.40	70	35.76	88	27.36	58	33.24	78	25.20	44	14.88	40	12.84	28	11.28	24
20	32.88	72	36.24	90	27.84	60	33.72	81	25.56	48	15.36	42	13.30	30	11.64	26
24	33.84	78	37.20	97	28.80	66	34.68	83	26.28	52	16.32	46	14.16	33	12.36	30
30	36.00	86	39.90	106	30.96	74	37.08	91	28.20	69	17.76	52	15.48	39	13.56	35
36	39.90	95	43.44	115	33.36	83	40.32	100	.....	..	19.44	59	17.04	45	15.00	40
42	43.20	104	47.28	125	35.76	94	44.28	110	.....	..	21.60	65	18.72	53	16.36	48
48	46.80	113	51.12	135	38.16	105	46.80	118	.....	..	23.76	71	20.40	58	18.12	54

*Return Idler list prices include either 4¼ in. or 1¾ in. drop hangers.

Dimensions in Inches

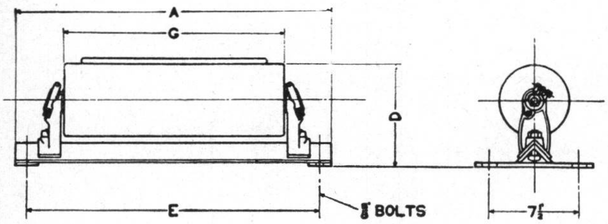
Belt width, in.	Troughing Idlers A	C	E	6 in. Diam. Rolls B	D	F	5 in. Diam. Rolls B	D	F	4 in. Diam. Rolls B	D	F	Return Idlers E	G
12	23¼	4 15/16	21	14⅝	8⅜	10	14⅛	7⅞	9⅝	15¼	7⅜	9¼	21	15
14	25¼	5 9/16	23	16¾	8⅜	10¼	17	7⅞	9⅞	17⅜	7⅜	9½	23	17
16	27¼	6¼	25	18 13/16	8⅜	10½	19 3/16	7⅞	10⅛	19½	7⅜	9¾	25	19
18	29¼	7	27	21 1/16	8⅜	10¾	21 5/16	7⅞	10⅜	21⅝	7⅜	10	27	21
20	31½	7½	29	22½	8⅜	11	22¾	7⅞	10½	23	7⅜	10⅛	29	23
24	35½	9	33	26⅞	8⅜	11½	27⅛	7⅞	11	27⅜	7⅜	10½	33	27
30	41½	11	39	32⅝	8⅜	12⅛	32⅜	7⅞	11¾	33⅛	7⅜	11⅜	39	33
36	47½	13	45	38 1/16	8½	13	38 11/16	8	12½	....	...	....	45	39
42	53½	15¼	51	44⅞	8 13/16	14⅛	45⅛	8 5/16	13⅝	....	...	....	51	45
48	59½	17½	57	51⅜	8⅞	14⅞	51⅝	8⅜	14 7/16	....	...	....	57	51

Return Idlers can also be furnished with 6 in. diam. and 5 in. diam. cast iron rolls. Prices on request.

Open stock.

BELT CONVEYOR ROLLS

WEBSTER "32" TYPE STANDARD DUTY ROLLER BEARING FLAT BELT IDLERS



The uses to which "32" Type Standard Duty Flat Belt Idlers may be put are many and varied.

They can be used as conveyors for packages of all sorts, mail sorting and classification, assembly conveyors, feeders, and for handling bulk materials where it is desirable to discharge the materials with the use of plows.

Height to top of rolls and base bolt size and centers are the same as for all other "32" Type Standard Duty Idlers.

Rolls are carried in malleable iron brackets mounted on heavy steel bases.

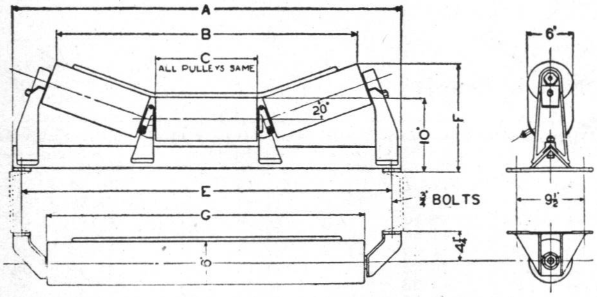
***List Prices, Dimensions in Inches and Average Weight in Pounds**

	Tubular Steel Rolls								D			
	6 in. Rolls		5 in. Rolls		4 in. Rolls							
Belt width, in.	Each	Weight	Each	Weight	Each	Weight	A	G	6 in. Rolls	5 in. Rolls	4 in. Rolls	E
12	$16.92	38	$14.48	33	$13.68	31	23½	15	8⅜	7⅞	7⅜	21
14	17.52	41	15.48	36	14.16	34	25½	17	8⅜	7⅞	7⅜	23
16	18.00	44	15.96	38	14.52	36	27½	19	8⅜	7⅞	7⅜	25
18	18.48	47	16.44	41	14.88	39	29½	21	8⅜	7⅞	7⅜	27
20	19.08	50	17.04	43	15.36	41	31½	23	8⅜	7⅞	7⅜	29
24	19.20	55	18.00	47	16.20	45	35½	27	8⅜	7⅞	7⅜	33
30	21.72	67	19.44	57	17.52	55	41½	33	8⅜	7⅞	7⅜	39
36	23.64	75	21.24	64	19.20	62	47½	39	8½	8	7½	45
42	26.52	87	23.64	76	21.48	74	53½	45	8 13/16	8 5/16	7 13/16	51
48	28.92	95	25.56	84	23.28	82	59½	51	8⅞	8⅜	7⅞	57

*6 in. diameter and 5 in. diameter cast iron rolls can also be furnished. Prices on request.

Open stock.

WEBSTER "32H" TYPE HEAVY DUTY ROLLER BEARING TROUGHING IDLERS



These idlers are designed to operate under severe conditions and to carry the heaviest loads. The general design of these idlers is the same as the "32" Type Standard Duty except that the steel bases, rolls and malleable iron hangers are heavier and roller bearings and shafts larger and stronger.

List Prices, Dimensions in Inches and Average Weight in Pounds

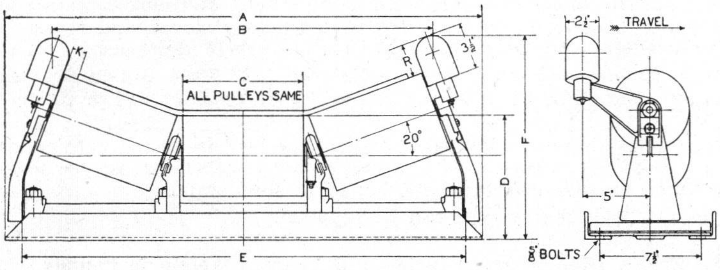
	Troughers with Steel Rolls*		Return Idlers with Steel Rolls*							
Belt width, in.	Each	Weight	Each	Weight	A	B	C	E	F	G
36	$72.00	195	$38.40	115	52½	39⅜	13½	50	14¾	42½
42	77.80	212	40.80	126	58½	45⅜	15¼	56	15½	48½
48	81.60	230	43.20	137	64½	51⅜	17¼	62	16	54½
54	86.40	250	45.60	148	70½	57⅛	19¼	68	16⅝	60½
60	91.20	270	48.00	159	76½	62 11/16	21¼	74	17 5/16	66½

*Prices for Cast Iron Rolls on application.

Open stock.

BELT CONVEYOR ROLLS

WEBSTER "32" TYPE STANDARD DUTY ROLLER BEARING SELF-ALIGNING IDLERS



Webster Self-Aligning Belt Idlers with side guide rollers are designed to automatically keep conveyor belts running in a straight line.

Standard belt idlers are pivotally mounted on a sub-base or supporting cross member in such a manner that any misalignment of belt changes the angle of the self-aligning-idler with respect to the centerline of the conveyor and causes the belt to return to normal running position.

Side guide rollers with ball bearings are provided to take care of the sudden or persistent crowding of the belt. Whenever the belt contacts the side guide roller, immediate and positive swiveling of the self-aligning idler results, and the belt returns to a central running position. The side guide rollers are mounted so as to contact the advancing edges of the belt.

Webster Self-Aligning Idlers will not damage the edge of the belt as there is very little pressure between the guide rolls and belt. These Self-Aligning Idlers should be spaced about every 50 feet for normal operating conditions but under exceptional conditions a closer spacing may be necessary.

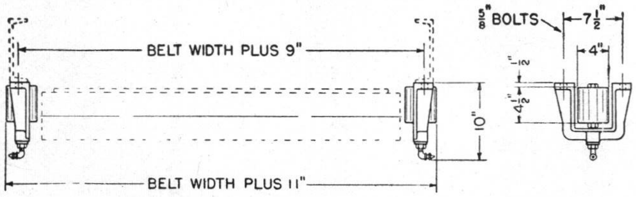
List Prices Each and Average Weight in Pounds

Belt width, in.	6 in. Diam. Roll				5 in. Diam. Roll				4 in. Diam. Roll	
	Steel		Cast Iron		Steel		Cast Iron		Steel	
	Each	Weight	Each	Weight	Each	Weight	Each	Weight	Each	Weight
14	$66.00	87	$69.36	105	$60.00	83	$65.88	102	$54.60	74
16	67.20	90	70.56	110	61.20	85	67.08	105	55.68	76
18	68.40	95	71.76	117	62.40	89	68.28	111	56.76	79
20	59.60	101	72.96	125	63.60	93	69.48	115	57.84	82
24	72.00	112	75.36	140	66.00	101	71.88	125	60.00	87
30	79.20	140	82.80	174	72.00	128	78.12	162	65.52	113
36	86.40	155	90.24	197	78.00	140	84.96	175	70.82	122
42	96.00	169	100.08	216	86.40	153	94.20	200	77.56	134
48	105.60	184	109.92	236	94.80	165	103.44	217	85.20	143

Dimensions in Inches

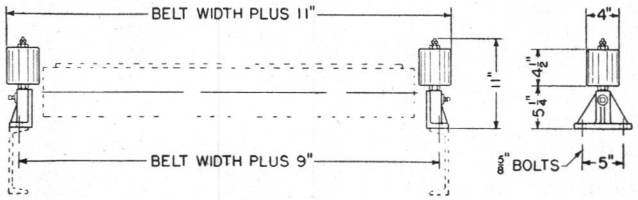
Belt width, in.	A	B	C	E	F	6 in. Diam. Rolls			5 in. Diam. Rolls			4 in. Diam. Rolls		
						D	K	R	D	K	R	D	K	R
14	25½	18⅝	5 9/16	23	13 15/16	9¼	1⅞	2⅜	8¾	2 1/16	2⅞	8¼	2¼	3⅜
16	27½	20⅝	6¼	25	14 3/16	9¼	1 15/16	2⅜	8¾	2⅛	2⅞	8¼	2 5/16	3⅜
18	29½	22¾	7	27	14 7/16	9¼	2 1/16	2⅜	8¾	2¼	2⅞	8¼	2 7/16	3⅜
20	31½	24¼	7½	29	14⅝	9¼	1 13/16	2⅜	8¾	2	2⅞	8¼	2 3/16	3⅜
24	35½	28½	9	33	15⅛	9¼	2 1/16	2⅜	8¾	2¼	2⅞	8¼	2 7/16	3⅜
30	41½	34¼	11	39	15 13/16	9¼	2 1/16	2⅜	8¾	2¼	2⅞	8¼	2 7/16	3⅜
36	47½	40	13	45	16½	9¼	2 1/16	2⅜	8¾	2¼	2⅞	8¼	2 7/16	3⅜
42	53½	46½	15¼	51	17¼	9¼	2 7/16	2⅜	8¾	2⅝	2⅞	8¼	2 13/16	3⅜
48	59½	53	17½	57	18 1/16	9¼	2 13/16	2⅜	8¾	3	2⅞	8¼	3 3/16	3⅜

WEBSTER "32" TYPE ROLLER BEARING SIDE GUIDE IDLERS



For "32" Type Return Idlers with 4¼ in. Drop Hangers

Weight per pair, lbs. 36
Per pair $28.80



For "32" Type Flat Belt Carriers

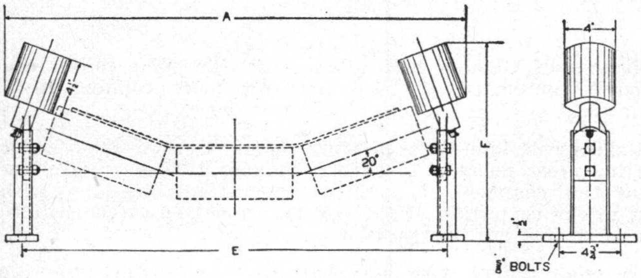
Weight per pair, lbs. 24
Per pair $28.80

Continued on Next Page

All above, open stock.

BELT CONVEYOR ROLLS

WEBSTER "32" TYPE ROLLER BEARING SIDE GUIDE IDLERS—Continued

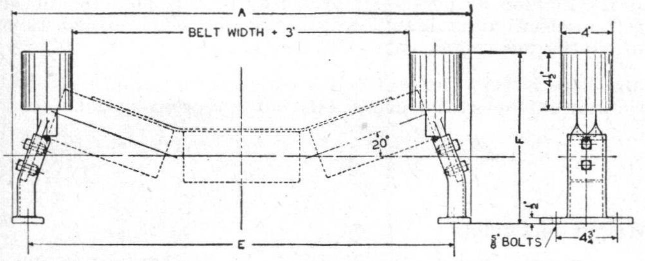


For the average Webster equipped belt conveyor, guide idlers are not required, but for some conveyors with narrow belts and long centers and for temporary conveyors that are being continually moved and reassembled, guide idlers may be necessary to maintain belt alignment.

For conditions such as these we offer the "32" Type Roller Bearing Side Guide Idlers, for use with any of the "32" Type Standard or Normal Duty Idlers.

Steel rolls with edges rounded to protect the belt are fitted with roller bearings, protected against dust and dirt by labyrinth metal grease seals and mounted on cast iron brackets, bolted to steel stands.

Grease fittings of any type can be supplied.

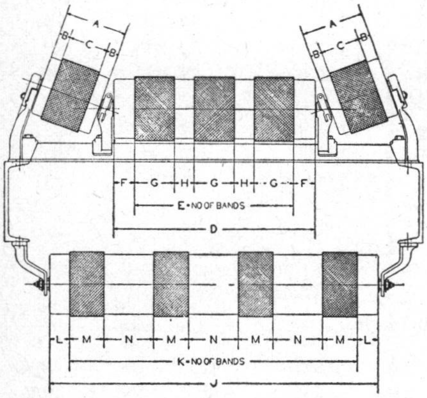


Straight Side Guide Idler Used with Tripper.

List Prices, Dimensions in Inches and Average Weight in Pounds

Belt width, in.	Per pair	A	E	F Inclined Idler	F Straight Idler	Wt. per pair, lbs.
14	$28.80	25½	23	14⅜	12¼	30
16	28.80	27½	25	14 9/16	12½	30
18	28.80	29½	27	14 13/16	12¾	31
20	28.80	31½	29	15	13	31
24	28.80	35½	33	15½	13⅜	32
30	28.80	41½	39	16 3/16	14⅛	33
36	28.80	47½	45	17	14⅞	34
42	28.80	53½	51	18 1/16	16	36
48	28.80	59½	57	18⅞	16½	37

Open stock.



WEBSTER WRAPPED RUBBER COVERED ROLLS

To reduce pulley rim wear, when operating under adverse conditions, idlers can be supplied with wrapped-rubber covering. The usual practice is to use ¼ in. thick, vulcanized untrimmed and unground wrapped bands. Untrimmed bands will vary plus or minus ¼ in. in width. Ground finished diameters or ground finished diameters with face width trimmed to size can also be furnished.

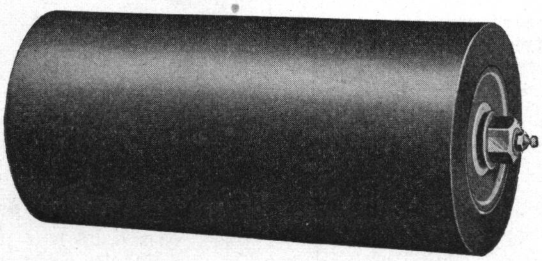
Rubber covering adds to the diameter of the roll.

Type Belt Idler	Belt width	A	B	C	D	E—No. of Bands	F	G	H	J	K—No. of Bands	L	M	N
"32" Standard Duty Troughers and Returns	12	4 15/16	31/32	3	4 15/16	1	31/32	3	..	15	2	2	3½	4
	14	5 9/16	1 1/32	3½	5 9/16	1	1 1/32	3½	..	17	2	2	4	5
	16	6¼	1	4¼	6¼	1	1	4¼	..	19	2	2	5	5
	18	7	1¼	4½	7	1	1¼	4½	..	21	3	2	3	4
Flat Belt Carriers and Returns and Self Aligners	20	7½	1¼	5	7½	1	1¼	5	..	23	3	2	3	5
	24	9	1½	6	9	1	1½	6	..	27	3	2	4	5½
	30	11	1½	8	11	1	1½	8	..	33	4	2	3½	5
	36	13	2	9	13	1	2	9	..	39	4	2	5	5
	42	15¼	2	11¼	15¼	1	2	11¼	..	45	5	2	4	5¼
	48	17½	2	13½	17½	1	2	13½	..	51	5	2	5	5½
"32" Heavy Duty Troughers and Returns	36	13½	2	9½	13½	1	2	9½	..	42½	4	3¾	5	5
	42	15¼	2	11¼	15¼	1	2	11¼	..	48½	5	3¾	4	5¼
	48	17¼	2	13¼	17¼	1	2	13¼	..	54½	5	3¾	5	5½
	54	19¼	2	15¼	19¼	1	2	15¼	..	60½	6	3¾	4¼	5½
	60	21¼	2	17¼	21¼	1	2	17¼	..	66½	6	3¾	5¼	5½
"32" Picking Table Troughers with "32" Standard Duty Returns	24	6¼	1⅛	4	14¼	2	2⅛	4	2	27	3	2	4	5½
	30	6¼	1⅛	4	20¼	3	2⅛	4	2	33	4	2	3½	5
	36	6¼	1⅛	4	26¼	4	2⅛	4	2	39	4	2	5	5
	42	6¼	1⅛	4	32¼	5	2⅛	4	2	45	5	2	4	5¼
	48	6¼	1⅛	4	38¼	6	2⅛	4	2	51	5	2	5	5½
	54	6¼	1⅛	4	44¼	7	2⅛	4	2	57	6	2	4¼	5½
	60	6¼	1⅛	4	50¼	8	2⅛	4	2	63	6	2	5¼	5½
Seneca Troughers and Returns	14	6¼	1	4¼	5	1	1	3	..	19¼	2	3⅛	4	5
	16	6¼	1	4¼	6¼	1	1	4¼	..	21¼	2	3⅛	5	5
	18	7¼	1⅛	5	6¼	1	1	4¼	..	23¼	3	3⅛	3	4
	20	7¼	1⅛	5	8¼	1	1⅛	6	..	25¼	3	3⅛	3	5
	24	9	1½	6	9	1	1½	6	..	29¼	3	3⅛	4	5½
	30	11	1½	8	11	1	1½	8	..	35¼	4	3⅛	3½	5

Prices on Request

BELT CONVEYOR ROLLS

WEBSTER "32" TYPE STANDARD DUTY RUBBER COVERED TROUGHING IDLERS



The use of rubber covered troughing idlers at loading points provides a shock absorbing cushion for conveyors handling lumpy materials.

Heavy or sharp cornered lumps may cause serious damage to belt or idlers. Damage to the belt alone, which is usually the most costly and vulnerable part of the conveyor, will justify the additional cost of a few rubber covered idlers.

For resistance to abrasion it is advisable to rubber cover all rolls, both carrying and returns. Rubber covers for this purpose are about ¼ in. thick for standard duty and picking table idlers and about ⅜ in. thick for heavy duty idlers.

The rubber covering of return rolls when handling abrasive materials is especially important because the return rolls are in contact with the carrying side of the belt.

List prices are for complete troughing idlers with steel rolls and vulcanized rubber cover and with stands of standard dimensions.

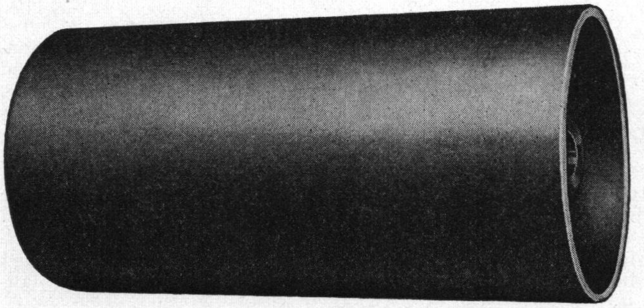
Prices on application for other thicknesses of rubber covers or for the covering of other types of troughers or returns.

Belt width, inches	½ in. Thick Rubber Cover				¾ in. Thick Rubber Cover	
	*6 in. diam. roll		*5 in. diam. roll		*6½ in. diam. roll	
	Each	Wt.	Each	Wt.	Each	Wt.
20	$ 97.44	66	$ 95.16	54	$131.52	78
24	100.80	74	98.28	58	135.36	88
30	108.36	94	105.60	75	144.00	118
36	116.76	108	......	..	158.40	131
42	125.16	120	......	..	172.80	150
48	133.44	132	......	..	187.20	166
54	......	...	......	..	......	...
60	......	...	......	..	......	...

*Diameter of roll given is outside diameter of rubber cover.

CAST IRON BELT CONVEYOR PULLEYS

WEBSTER SOLID TYPE



The accurate construction of these pulleys meet every requirement for long and efficient service. Crowned faces will be furnished unless otherwise specified. The hubs are concentrically bored and the carefully located arms permit the use of minimum size shafting, bearings, etc.

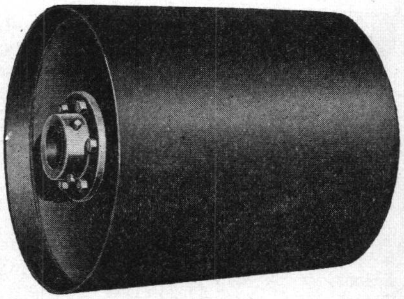
The pulley face should be two inches wider than the belt width up to and including 42 inch wide belts. For belts wider than 42 inch the pulley face should be 3 inches wider than the belt.

Prices on Request

STEEL BELT CONVEYOR PULLEYS

WEBSTER SOLID TYPE

The feature of this pulley is the combination of maximum strength and minimum weight. The drum type construction with steel discs welded to the rim provides a closed end feature that excludes water and dirt from the interior, thus making this type of pulley quite desirable for belt conveyor service. The hubs are bolted on and are interchangeable. Crowned faces will be furnished unless otherwise specified. A straight keyway and two set screws for each hub is standard. Designed for 120 lbs. effective belt tension per inch width of face.



Prices on Request

SCREW CONVEYORS

We can furnish Screw Conveyors and Component Parts. Descriptive literature, complete Specifications and prices at your request

ELEVATOR BUCKETS

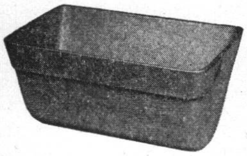
MALLEABLE IRON

Style A

Used to handle ear corn, cement, coal, pulp, etc. This style is most generally used.

Standard back.

Inside dimensions, in. Length	Width	Depth	Each	Capacity, cubic ft.	Av. wt. each, lbs.
4	2¾	3	$ 0.62	.01	1.0
5	3½	3¾	1.00	.02	1.5
6	4	4¼	1.28	.03	2.5
7	4½	5	1.52	.05	3.1
8	5	5½	1.80	.07	4.4
9	6	6¼	2.60	.11	6.1
10	6	6¼	2.90	.12	6.9
11	6	6¼	3.10	.13	7.7
12	6	6¼	3.30	.14	8.5
12	7	7¼	3.80	.19	11.0
14	7	7¼	4.40	.23	12.9
15	7	7¼	4.70	.25	13.8
16	7	7¼	5.20	.27	14.8
14	8	8½	6.00	.30	16.7
16	8	8½	6.80	.34	18.8
18	8	8½	7.50	.39	21.7
20	8	8½	8.60	.43	23.6
24	8	8½	10.80	.51	27.5
18	10	10½	11.70	.61	33.0

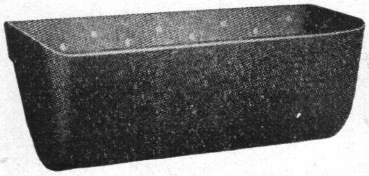


Style AA

Similar to Style A, but with front edge thicker than the body for greater wear and longer life. Style AA buckets are well adapted to handling heavy materials as stone, gravel and similar heavy abrasives. Standard back.

Inside dimensions, in. Length	Width	Depth	Each	Capacity, cubic ft.	Av. wt. each, lbs.
6	4	4¼	$ 1.40	.03	3.1
8	5	5½	2.00	.07	5.3
10	6	6¼	3.00	.12	8.5
11	6	6¼	3.30	.13	9.6
12	6	6¼	3.60	.14	10.4
12	7	7¼	4.20	.19	13.8
14	7	7¼	4.90	.23	16.0
15	7	7¼	5.20	.25	16.9
16	7	7¼	5.70	.27	18.1
14	8	8½	6.60	.30	21.0
16	8	8½	7.50	.34	25.4
18	8	8½	8.20	.39	29.5
24	8	8½	12.30	.51	39.5

SALEM STEEL



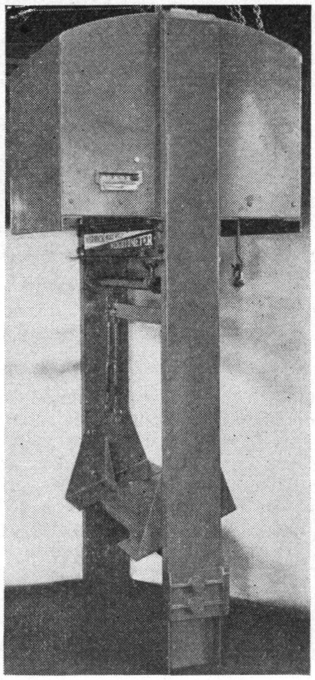
Formed from one piece of sheet steel, securely riveted or spot welded at the back. Lapped ends make a smooth tight joint with round bottom and corners.

Bucket size, in.	18 gauge Each	18 gauge Wt. each, lbs.	16 gauge Each	16 gauge Wt. each, lbs.	14 gauge Each	14 gauge Wt. each, lbs.	12 gauge Each	12 gauge Wt. each, lbs.
5 x4	$0.85	1.2	$....	....	$1.36	1.82	$....	...
5½x4	.88	1.3	....	....	1.42	1.95	....	...
6 x4	.90	1.4	....	....	1.48	2.10	....	...
7 x4½	.95	1.6	1.12	1.92	1.54	2.40	....	...
8 x5	1.10	1.9	1.24	2.00	1.74	2.50	3.00	3.0
9 x5	1.15	2.1	1.31	2.20	1.82	2.75	3.10	3.5
10 x5	1.20	2.33	1.38	2.60	1.90	3.25	3.20	4.2
10 x5½	1.26	2.65	1.50	2.80	2.00	3.50	3.40	4.8
9 x6	1.24	2.0	1.50	2.40	....	....	3.40	3.9
10 x6	1.30	2.6	1.56	3.00	2.26	3.90	3.52	5.0

All above, open stock.

WEIGHTOMETERS

MERRICK



Weightometer shown with usual supports for assembly with inclined belt conveyor chain drive to integrator carried between flanges of front support and guarded with cover plate. Take-up rig at bottom. Note clean cut assembly. Weight totalizing counter visible through window in front wall of turret head.

"Weigh While You Convey"

For many years the name "Merrick" has been synonymous with conveyor weighing.

Hundreds of installations, successfully weighing in transit all kinds of bulk materials carried by belt and other type conveyors, have created for Merrick a vast reservoir of knowledge and operating experience which is reflected in present day designs. Application engineers with practical field ideas are available to recommend the best conveyor weighing installation to fit any given set of field conditions and requirements.

In some cases a simple job of continuous automatic weighing only is required. In others, controlled rate of feed may be essential or a combination of the two.

In more advanced work Merrick offers automatic Batch Weighing Chart Recording: Rate of Flow Indicating, Proportioning of Materials by Weight, Constant Rate of Feed and Weight Control Pilots to control other processes.

The Weightometer uses the moving belt as the scale platform and ingeniously combines the speed of the belt with the variable deflection caused by the load on the belt, to determine and to continuously totalize the weight.

The weight integrator is extremely simple, mechanical in operation, easily understood and maintained by the average plant mechanic. There are no complicated parts. Power to drive the integrator is usually taken from the conveyor itself.

The Weightometer may be used with a new conveyor or engineered to suit existing conveyor. Seldom is it necessary to change an existing conveyor to accommodate the Weightometer. In cases where space is at a premium, or where there is no conveyor available suitable for weighing, the Weightometer may be supplied with short pivoted conveyor, as a complete conveying and weighing unit.

The Integrator—How It Works

The mechanical weight integrator consists of a stainless steel integrator table, slightly concave, driven at a speed that is always proportional to the true speed of the conveyor and an integrating swivel disc positioned by the beam pendulum weight so that its position on the integrator table instantaneously and continuously corresponds to the true position of the scale beam.

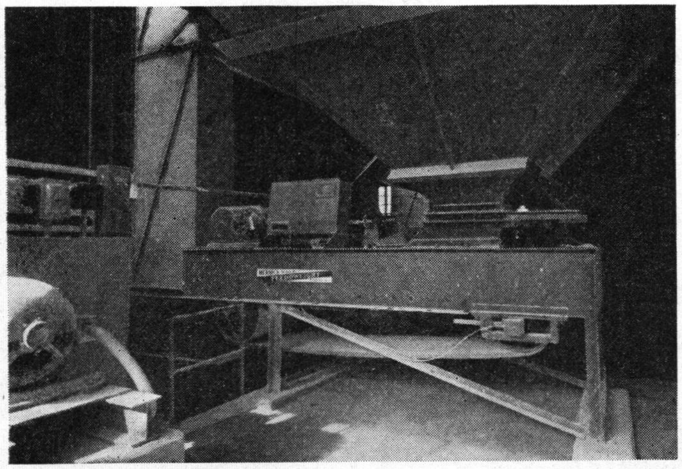
When a load of material on the belt conveyor passes over the suspended idlers, the momentary and varying deflection is transmitted to the scale beam which accurately counterbalances it and simultaneously the beam pendulum weight, by link connection to the frame of the integrating swivel disc, tilts the latter around its vertical axis causing it to become repositioned on the integrator table. The carriage supporting the frame and the integrating swivel disc freely moves into its new position on its track.

The speed of rotation of the integrating swivel disc continuously changes according to its momentary position on the integrator table and this speed is transmitted through telescoping shaft to the master weight totalizer through a differential gear assembly.

The completely mechanical weight integrator is extremely sensitive and instantly responsive to every change in load on the belt conveyor.

Prices on Request

FEEDOWEIGHTS



For Feeding, Proportioning or Batching

The Feedoweight correctly and uniformly feeds material by weight. In addition, an automatic totalizer may be furnished to totalize the weight of all materials so fed. It is a machine of unexcelled accuracy.

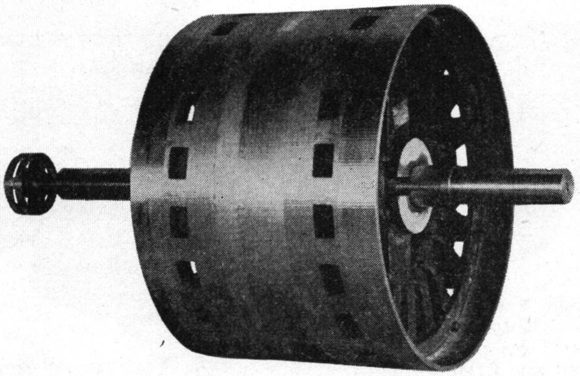
The Feedoweight uses Applied Power to regulate the Feed Gate without any retarding of scale beam. Instantaneous and continuously sensitive response to every variation of load. Surplus of power available to automatically position any other controlling devices to assure positive accuracy of weighing, proportioning and totalizing.

Rugged, heavy duty design. Mechanical in operation. Installation easy, requiring minimum headroom.

Complete Information and Prices on Request

MAGNETIC PULLEY SEPARATORS

MEMCO HIGH POWER



Positive in action; self-cleaning; easy to install.

Replaces the head pulley of a belt conveyor, thus converting that conveyor into a magnetic separator.

Material carried on the conveyor belt passes over the magnetic pulley, which holds magnetic particles to the belt until they reach the underside, pass out of the magnetic field and are discharged. The shaft of the magnetic pulley can duplicate the dimensions of the existing head pulley and often the existing bearings can be used. Pulley operates through any belt.

Memco High Power Magnetic pulleys are designed to provide the flux pattern most effective for the application.

Standard Equipment Furnished

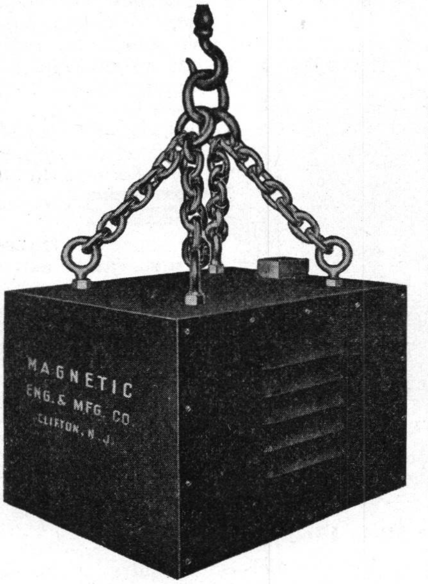
The shaft, set collars, collector rings, brush holders with brushes, dust-tight collector ring housing; and fully enclosed steel switch cabinet in which is mounted the kick-absorbing resistance, quick break switch, fuses, pilot lamp receptacle, and bullseye indicator, are furnished with each pulley as standard equipment.

Bearings are not included but can be supplied at moderate cost.

Complete Information and Prices on Request

SUSPENDED MAGNETIC SEPARATORS

MEMCO HIGH POWER, RECTANGULAR



Type IR—Double Gap, Heavy Duty

Has been specially designed as a safety magnet, for removing tramp iron and other miscellaneous iron from coal, rock, ore and similar materials.

The size of magnet required is determined by the width of the conveyor belt, the speed of the belt and the amount and size of material handled on the belt.

The strength of the magnet is uniform across the entire width of the magnet so that the width of the magnet used need only be as wide as the width of the material on the belt. There is no chance of stray pieces of iron riding on the edge of the belt and passing the magnet.

Standard Equipment Furnished

Includes suspension chains, center ring, outlet box for lead connections, and a steel switch cabinet in which are mounted the special quick breaking switch, fuses, pilot lamp receptacle, bullseye indicator and kick absorbing resistance.

The magnet coils are wound to operate on any standard direct current voltage.

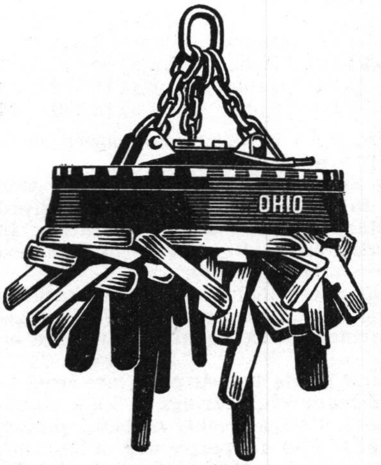
30 in. long; body of magnet 20 in. high.

Width, in.	Each	Height to center of center ring, in.	Watts	Wt. each, lbs.
12	$.....	42	700	1300
14	.....	42	800	1500
16	.....	42	900	1800
18	.....	42	1000	2000
20	.....	42	1100	2200
24	.....	42	1300	3000
30	.....	48	1500	3600
36	.....	48	2000	4000
48	.....	54	2600	5000
54	.....	54	3000	5500

Prices on Request

LIFTING MAGNETS

OHIO



Practically indestructible, Ohio magnets have the rugged construction necessary for lowest maintenance costs. Ohio magnets sold in 1920 are still in active, profitable service. Critical users in ever growing numbers are finding that these magnets provide maximum efficiency in fast operations.

A wide range of sizes provide lifting magnets to fit every industrial need. Large magnets ranging from 36 to 65 in. diameter are used on loads varying from 1600 to 7800 lbs. Smaller round magnets 12 to 29 in. in diameter are efficient for odd or special jobs when a lifting range of 180 to 1400 lbs. is required.

Rectangular styles are also avaliable.

Complete Information and Prices on Request

INDUSTRIAL TRANSMISSIONS

DRIVE-ALL

DRIVE ALL
DETROIT MICH.
U.S.A.

The new Drive-All power unit gives correct speeds for efficient production by changing the position of one lever only.

In addition to 34 stock models ranging from fractional to 30 HP, special transmissions can be made to the user's specifications as well as to individually driven machine tools. A wide range of adjustable mounting brackets can also be supplied.

Drive-All motorizing units put your present machines on a par with new and latest design machines.

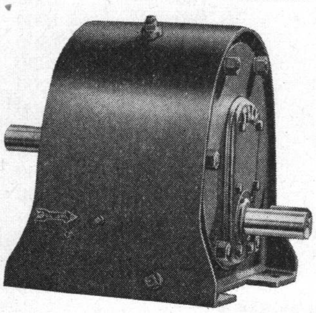
Drive-All is Used On—

- Homogenizers
- Chemical Machinery
- Pipe Processing Machines
- Harvesting Machinery
- Automatic Production Machines
- Textile Machinery
- Glue-Making Machinery
- Testing Equipment
- Commercial Laundry Machines
- Book-binding Machines
- Food Processing Equipment
- Conveyors
- Power Presses
- Metalworking Machines
- Woodworking Machines
- Ventilating Equipment

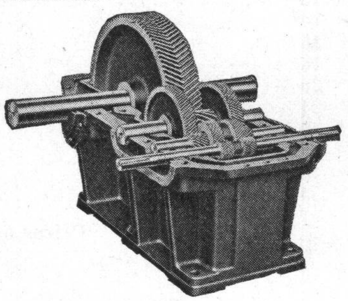
Complete Information and Prices on Request

SPEED REDUCERS

FALK PRECISION



Type C



Herringbone

Reduction	Ratios
Single	1.49 : 1 to 2.74 : 1
Double	3.36 : 1 to 25.83 : 1
Triple	31.25 : 1 to 159 : 1
Quadruple	194 : 1 to 972 : 1

Parallel shaft

Reduction	Ratios
Single	2.2 : 1 to 10.1 : 1
Double	11.5 : 1 to 70.2 : 1
Triple	80 : 1 to 300 : 1

Right Angle Speed Reducers, with horizontal low speed shaft or with vertical low speed shaft are also available.

The basis of standard Falk Speed Reducer design is that each unit shall transmit safely its full rated capacity, 100% overload at starting and 100% momentary overload during operation. In carrying out this design, strength and rigidity have been combined without sacrifice of compactness and simplicity.

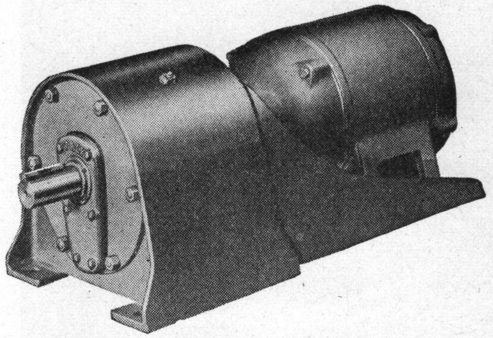
Falk standard Parallel Shaft Speed Reducers feature precision cut herringbone and double helical gears. Symmetrical arrangements of gears, shaft and bearings insure equalized pressure on bearings.

Precision cut spiral bevel and single helical gears are used to effect simplest arrangement of gears and bearings in Falk standard Right Angle Speed Reducers. Unit assembly of bevel pinion, shaft and bearings in a cage results in permanent alignment. Lubrication is by the continuous splash system in horizontal units and built-in oil pump in vertical units. Bearings and gears are amply lubricated. Housings are totally enclosed and oil tight.

Complete Information and Prices on Request

MOTOREDUCERS

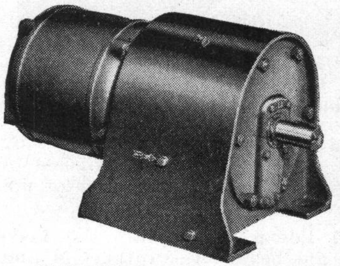
FALK ALL-STEEL



Falk Horizontal All-Motor Motoreducers

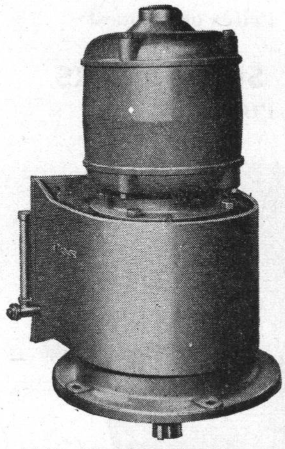
HP range—1 to 50

Output RPM range—1.0 to 520

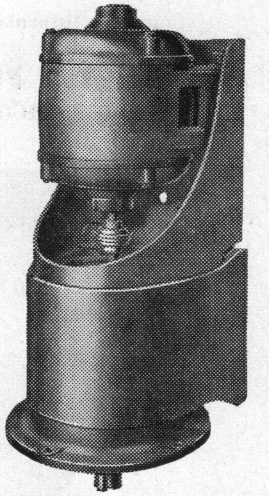


Falk Horizontal Integral Motoreducers
HP range—1 to 30
Output RPM range—1.0 to 520
Designed for standard NEMA flange motor, type "D"

The new Falk All-Steel Motoreducer is an advanced design of the successful Falk Motoreducers which have operated efficiently for over 16 years. This modern development in Motoreducer design has produced an All-Steel unit which is stronger—more rigid and greatly simplified. It is the modern drive for modern conditions.



Falk Vertical Integral Motoreducers
HP range—1 to 30
Output RPM range—1.0 to 520
Permits use of standard NEMA flange motor, Type "D"



Falk Vertical All-Motor Motoreducer
HP range—1 to 50
Output RPM range—1.0 to 520

With the Falk All-Motor type Motoreducer you can select motors of any make, speed or type within the range of the unit. The separate motor greatly simplifies inspection and maintenance since either the motor or the gears can be separately removed without disturbing the other.

A Falk Steelflex Coupling connects the standard motor shaft with the pinion shaft. This provides protection against vibration, shock or misalignment. It adds torsional flexibility to the drive.

Additional advantages built into the improved Falk All-Motor Motoreducer are:

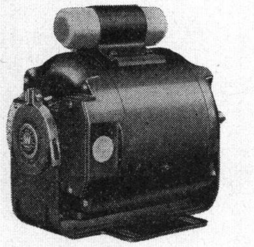
- Wider Speed Range
- Improved Gearing
- Greater Oil Capacity
- Increased Overhung Load Capacity
- All-Steel Housing
- No Parts Require Adjustment
- Sealed Housings
- Quiet Operation
- Reducer efficiency 96% to 97% minimum at full load

Complete Information and Prices on Request

ELECTRIC MOTORS

WESTINGHOUSE

CAPACITOR START—TYPE FJ



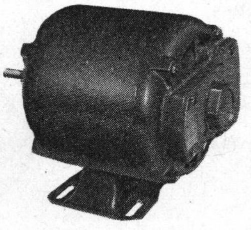
Sizes ⅙, ¼, ⅓, ½ and ¾ HP

Type FJ Capacitor Motors are all-purpose single phase motors for high starting torque, low starting current. They offer both economy and quiet operation and are ideal for all heavy duty drives such as compressors, pumps, stokers, etc.

Dual voltage in all but ⅙ and ¼ HP six-pole sizes. Available with rigid or resilient mounting. Reversed by changing terminal block connections.

All sizes may be obtained with overload protection device.

HIGH TORQUE—TYPE FHT



Sizes ⅛, ⅙, ¼ and ⅓ HP

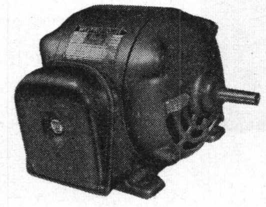
Type FHT High torque Motors are split-phase motors designed for continuous and intermittent duty applications where operation is infrequent and starting current in excess of NEMA values is not objectionable. Suited for small machines of all kinds. They may cause light flicker on underwired or overloaded lighting circuit.

GENERAL PURPOSE—TYPE FH

⅛, ⅙, ¼ and ⅓ HP

Split phase motors suitable for frequent starting applications where medium starting and breakdown torques are satisfactory. Low starting current minimizes light flicker making motor suitable for fans. blowers, and certain types of pumps and compressors.

CAPACITOR-START, INDUCTION-RUN—TYPE CAP



Sizes ¾ to 7½ HP

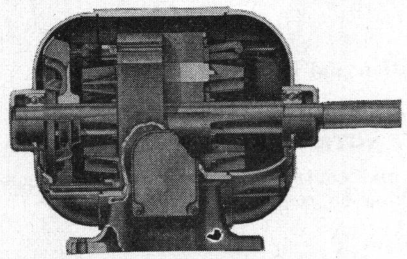
Type CAP motors can be used for practically any single phase application, such as: air compressors, reciprocating and centrifugal pumps, machine tools and similar applications.

These motors offer the advantages of having no commutator or brushes to wear or be replaced and provide complete absence of radio interference.

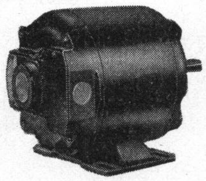
Utilize the capacitor for starting only and then operate as induction motors providing high efficiency and power factor.

A thermoguard for overload protection can be supplied.

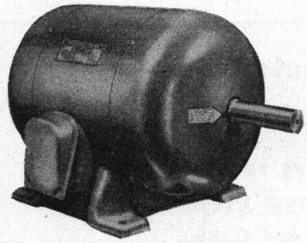
SQUIRREL-CAGE "LIFE-LINE"—TYPES FS AND CSP



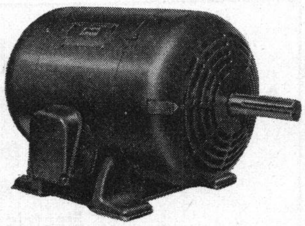
Cutaway View of Open Type CSP



Open Type FS



Splash-Proof Type CSP



Fan-Cooled Type CSP

Open Drip-Proof Motors

Provide proved Westinghouse construction features and are widely used for constant speed, heavy duty applications such as pumps, fuses. blowers, compressors, conveyors and similar equipment.

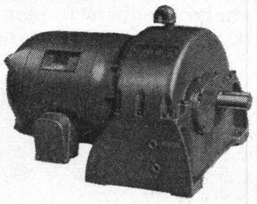
Splash-Proof Motors

Offer full protection against splashing or dripping liquids and directed ventilation for effective cooling. May be used both indoors and outdoors.

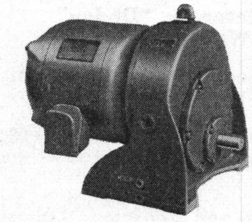
Totally Enclosed Fan-Cooled and Explosion-Proof Motors

May be used both indoors and outdoors. Explosion-proof motors meet Underwriters' requirements for hazardous locations.

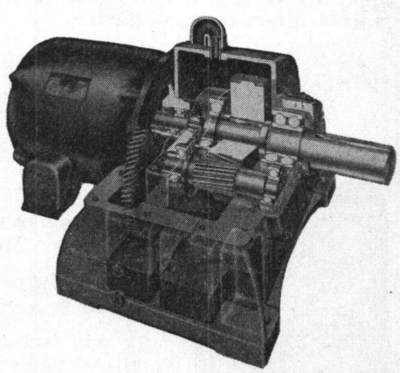
AC SQUIRREL CAGE GEARMOTORS—TYPE A, C AND E



Type C



Type A



Cutaway View of Type E

Horizontal Types

AC Squirrel Cage Gearmotors are self-contained drives each consisting of a high speed Westinghouse motor and speed reducing unit.

Three types are available:

Single Reduction—Type A (Std. Ratio—1.22:1 to 6.25:1 incl.)

Double Reduction—Type C (Std. Ratio—7.6:1 to 25.7:1 incl.)

Double Reduction—Type E (Std. Ratio—31.2:1 to 58.3:1 incl.)

Special features include complete units built by Westinghouse to provide undivided responsibility to the user—BPT heat-treated "tough hard" gears—simplified design requires fewer parts, minimizes maintenance and provides easy access to all gear unit parts.

Gearmotors in addition to those listed are also available with CSP Life-Line and CS open linestart. Class II, splash-proof, fan-cooled, explosion-proof motors. CWP and CW wound-rotor and SK direct-current motors.

Complete Specifications and Prices on Request

MANUAL STARTERS

WESTINGHOUSE ACROSS-THE-LINE (FULL VOLTAGE)

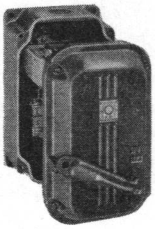
Class 10-015 Motor Snap Switches

Without overload protection.

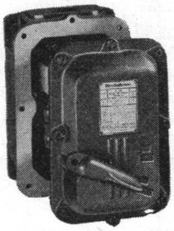
For controlling small AC or DC motors up to 2 HP.

Available in 2, 3 or 4 poles, 110 to 600 volts.

Standard Sheet Steel Enclosure



Dust and Watertight Enclosure



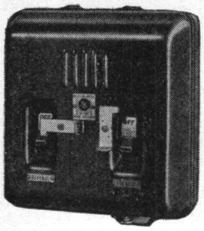
Enclosure for Hazardous Locations

Class 10-100 Non-Reversing "De-Ion" Motor Watchman

Thermal bimetallic overload protection; quick make, quick break; "De-Ion" grids; indicating trip-free handle; safety interlocked cover.

Designed for starting, stopping and protecting small single phase and polyphase AC motors. Most commonly used on motors driving fans, pumps, machine tools and similar industrial plant applications. May also be used for small DC motors which may be started directly across-the-line.

⅙ to 7½ HP; 60, 50 and 25 cycles; 1 and 3 phase; 110 to 600 volts, AC.



Standard Sheet Steel Enclosure

Class 10-110 Reversing "De-Ion" Motor Watchman

Consists of two standard Class 10-100 units mounted in a single box.

It will start, stop, reverse and protect small AC motors on such applications as machine tools, etc.

⅙ to 7½ HP, 60, 50 and 25 cycles; 3 phase, 110 to 600 volts, AC.

A similar switch (Class 10-130) is available for use with a 2-speed, 2-winding motor and is particularly suited to industrial fan applications.

Class 10-700, Type A Autostarter, Non-Reversing, Reduced Voltage

Designed for application wherever across-the-line starting current of squirrel-cage induction motors is likely to exceed local power company restrictions, or interfere with plant operations. They keep current inrush within limits and give maximum starting torque for the least inrush current.

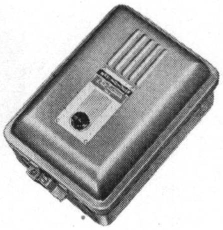
The Autostarter is simple and safe to operate adjustable to the application, protects against overload or low voltage, and is positive in action.

5 to 200 HP; 2 and 3 phase; 60, 50, 40 and 25 cycles; 220, 440, 550 or 2200 volts.

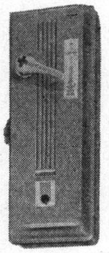
Complete Information and Prices on Request

MAGNETIC STARTERS

WESTINGHOUSE "LIFE-LINE" ACROSS-THE-LINE (FULL VOLTAGE)



Sheet Steel Enclosure with Separate Pushbutton Control



Combination Linestarter with AB Circuit Breaker

Class 11-200 "De-Ion" Linestarters

Snap action, bimetallic disc, overload relay retains precise action and accurate calibration after millions of operations. Simple adjustment for "hand," "automatic reset" or "stop."

"De-Ion" arc quenchers confine, divide and extinquish arc in half a cycle or less.

All parts front removable. Only one moving part, a "see-saw" balanced on a knife edge; no sliding, no sticking, no jamming. Center fulcrum and positive kickout spring.

The combination linestarter provides the safest and most modern circuit protection that can be built into a combination starter. Common trip prevents phasing. New slamproof handle mechanism—safe; interlocking—cover cannot be opened with breaker in "on" position.

Class 11-200 Linestarters also available with dust and watertight enclosures and with cast iron enclosure for Class 1, Group D locations.

Complete Information and Prices on Request

NOTE

We can furnish motors and controls for any service or condition. Complete data available on request.

We Are Distributors For

ANACONDA WIRE AND CABLE COMPANY

Offering the following services:

LOCAL WAREHOUSE STOCKS

of Electrical Wires and Cables

ENGINEERING AND TECHNICAL SERVICE

A Few of the Products Available

Rubber and Plastic Building Wire
Rubber and Plastic Power Cables
Bare and Weatherproof Wire
Copperweld Composite Cables
Lead Covered Cables
Trolley Wire
Magnet Wire
Shot Firing Cord
Blasting Wire
Portable Cord and Cables
Cable Accessories
Control Cables
Mining Machine Cables

YALE ELECTRIC HOISTS

STANDARD MODELS OF THE CABLE KING WIRE ROPE ELECTRIC HOIST

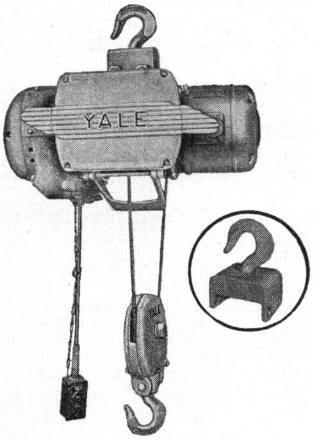


Fig. H—Hook Type

Lug and Hook Types—are made in both Parallel and Right Angle Suspension.

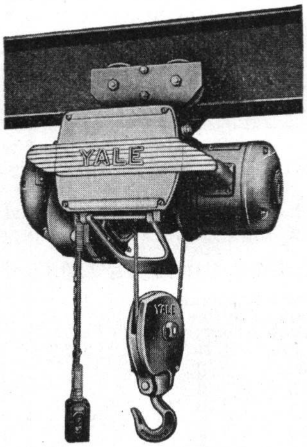


Fig. P—Plain Trolley Type

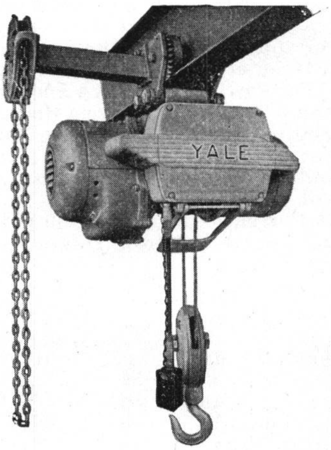


Fig. G—Geared Trolley Type

Plain and Geared Trolley Types—are made in both Parallel and Rigid Angle Suspension.

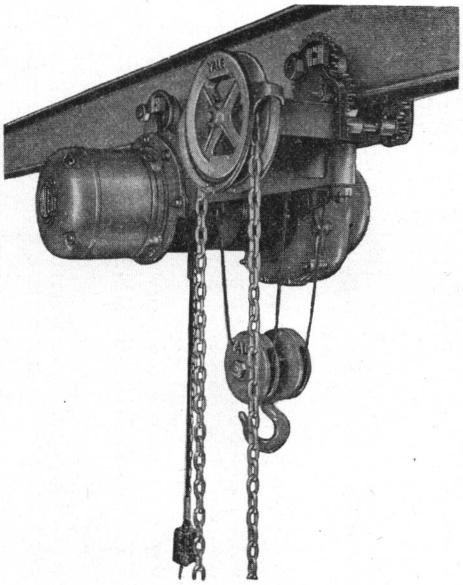


Fig. LCT—Close Headroom Type

Right angle suspension made with either Plain or Geared Trolley.

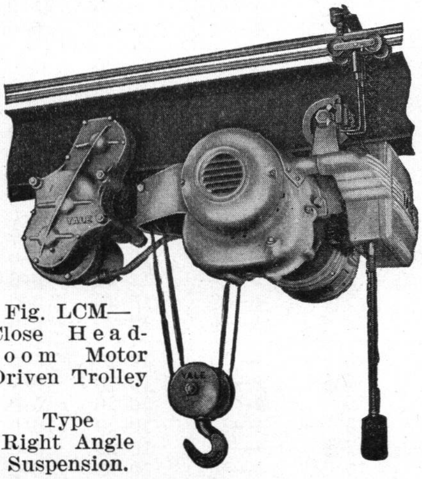


Fig. LCM—Close Headroom Motor Driven Trolley Type Right Angle Suspension.

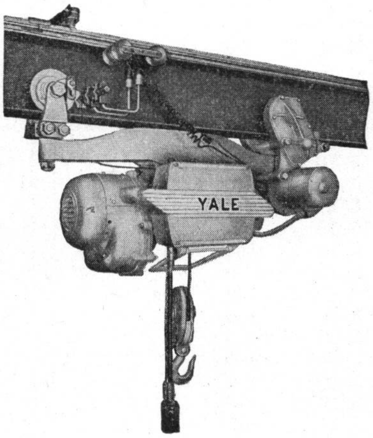


Fig. M—Motor Driven Trolley Type

Made in both Parallel and Right Angle Suspension.

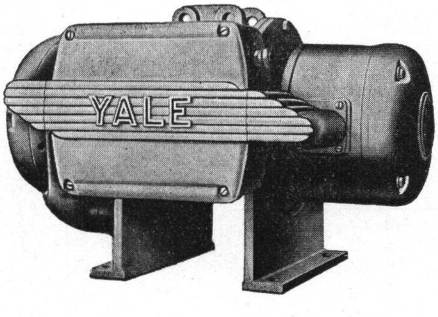


Fig. S—Winch or Base Mounted Type

Top or Bottom Entry.

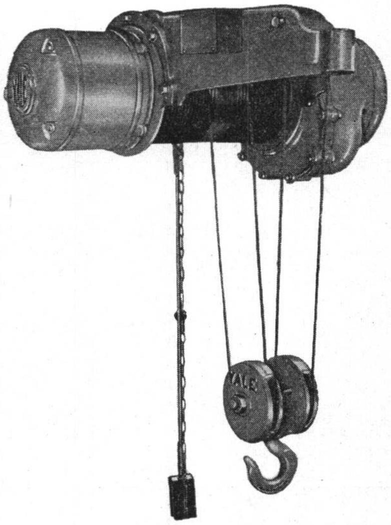


Fig. LCL—Close Headroom Long Type Right Angle Suspension.

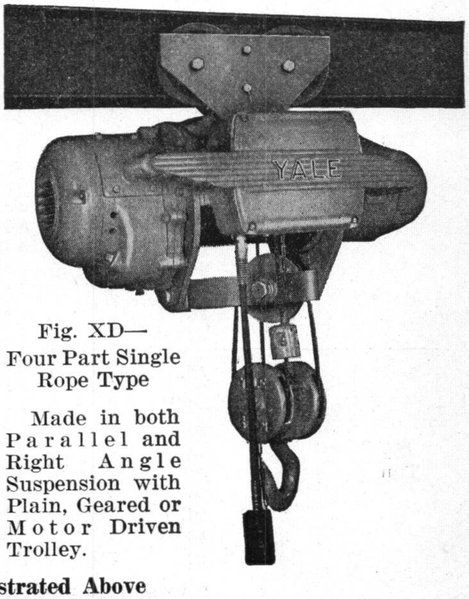


Fig. XD—Four Part Single Rope Type

Made in both Parallel and Right Angle Suspension with Plain, Geared or Motor Driven Trolley.

The Cable King Can Be Furnished In the Various Types Illustrated Above

Lift, Speed and Capacity Information Will Be Found on Following Page.

ELECTRIC HOISTS

YALE "CABLE KING"

Incorporates in its design and construction the following essential features: maximum in ruggedness and strength; simplicity in design, operation and maintenance; standardized interchangeability of repair parts; practical provision for "air cooling"; small over all dimensions; maximum practical use of ball or roller bearings; high over all efficiency; all machining, heat treating, fit and finish in accordance with modern automotive practice.

Exhaustive laboratory and field tests have demonstrated that the Yale Cable King, due to its design and construction, will perform on a heavier duty cycle than has been generally available with electric hoists.

Alternating Current—110, 220 or 440 volts, 2 or 3 phase, 60 cycles (Hoisting and lowering speeds same as standard speeds shown below). 110, 220 or 440 volts, 2 or 3 phase, 25-50 cycles (Hoisting and lowering speeds 20% less than standard speeds). 110 or 220 volts, single phase, 60 cycles (Available up to and including 2 HP—Hoisting and lowering speeds approximately same as standard speeds shown below).

Direct Current—110, 220 or 440 volts (Hoisting Speed—full load, standard speed plus 5%, no load, standard speed plus 20%; Lowering Speed—full load, standard speed plus 20%, no load, standard speed plus 20%).

Standard Hoist Capacities, Lifts and Speeds

Capacities	Std. lift in ft.	Standard hoist speed, FPM	Motor HP	No. of ropes and size, in.	Standard I-Beam for trolley type, in.	Minimum radius of curve, ft. in.
¼ Ton	19	24	½	2—3/16	5–10	1–9
	19	36	¾	2—3/16	5–10	1–9
	19	55	1¼	2—3/16	5–10	1–9
	19	64	1¼	2—3/16	5–10	1–9
	38	24	½	2—3/16	5–10	1–9
	38	36	¾	2—3/16	5–10	1–9
	38	55	1¼	2—3/16	5–10	1–9
	38	64	1¼	2—3/16	5–10	1–9
	17	24	½	4—3/16	5–10	4–0
	17	36	¾	4—3/16	5–10	4–0
	17	55	1¼	4—3/16	5–10	4–0
	17	64	1¼	4—3/16	5–10	4–0
	26	24	½	4—3/16	5–10	4–0
	26	36	¾	4—3/16	5–10	4–0
	26	55	1¼	4—3/16	5–10	4–0
	26	64	1¼	4—3/16	5–10	4–0
½ Ton	19	24	⅞	2—¼	5–10	1–9
	19	36	1½	2—¼	5–10	1–9
	19	55	2	2—¼	5–10	1–9
	19	64	2	2—¼	5–10	1–9
	38	24	⅞	2—¼	5–10	1–9
	38	36	1½	2—¼	5–10	1–9
	38	55	2	2—¼	5–10	1–9
	38	64	2	2—¼	5–10	1–9
	17	24	⅞	4—3/16	5–10	4–0
	17	36	1½	4—3/16	5–10	4–0
	17	55	2	4—3/16	5–10	4–0
	17	64	2	4—3/16	5–10	4–0
	26	24	⅞	4—3/16	5–10	4–0
	26	36	1½	4—3/16	5–10	4–0
	26	55	2	4—3/16	5–10	4–0
	26	64	2	4—3/16	5–10	4–0
1 Ton	20	20	1½	2—5/16	6–12	1–9
	20	30	2	2—5/16	6–12	1–9
	20	36	3	2—5/16	6–12	1–9
	20	46	3	2—5/16	6–12	1–9
	20	72	5	2—5/16	6–12	1–9
	38	20	1½	2—5/16	6–12	1–9
	38	30	2	2—5/16	6–12	1–9
	38	36	3	2—5/16	6–12	1–9
	38	46	3	2—5/16	6–12	1–9
	38	72	5	2—5/16	6–12	1–9
	16	20	1½	4—¼	6–15	4–6
	16	30	2	4—¼	6–15	4–6
	16	36	3	4—¼	6–15	4–6
	16	46	3	4—¼	6–15	4–6
	16	72	5	4—¼	6–15	4–6
	27	20	1½	4—¼	6–15	4–6
	27	30	2	4—¼	6–15	4–6
	27	36	3	4—¼	6–15	4–6
	27	46	3	4—¼	6–15	4–6
	27	72	5	4—¼	6–15	4–6
1½ Ton	16	20	3⅓	2—⅜	6–12	1–9
	16	29	3	2—⅜	6–12	1–9
	16	36	5	2—⅜	6–12	1–9
	16	46	5	2—⅜	6–12	1–9
	23	72	7½	2—⅜	8–15	3–0
	32	20	3⅓	2—⅜	6–12	1–9
	32	29	3	2—⅜	6–12	1–9
	32	36	5	2—⅜	6–12	1–9
	32	46	5	2—⅜	6–12	1–9
	45	72	7½	2—⅜	8–15	3–0

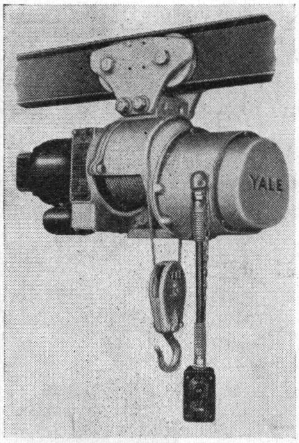
Capacities	Std. lift in ft.	Standard hoist speed, FPM	Motor HP	No. of ropes and size, in.	Standard I-Beam for trolley type, in.	Minimum radius of curve, ft. in.
1½ Ton	13	20	3⅓	4—5/16	6–15	4–6
	13	29	3	4—5/16	6–15	4–6
	13	36	5	4—5/16	6–15	4–6
	13	46	5	4—5/16	6–15	4–6
	17	72	7½	4—5/16	8–15	5–0
	22	20	3⅓	4—5/16	6–15	4–6
	22	29	3	4—5/16	6–15	4–6
	22	36	5	4—5/16	6–15	4–6
	22	46	5	4—5/16	6–15	4–6
	28	72	7½	4—5/16	8–15	5–0
2 Ton	18	20	3⅓	2—7/16	8–15	3–0
	18	30	5	2—7/16	8–15	3–0
	18	36	5	2—7/16	8–15	3–0
	18	51	7½	2—7/16	8–15	3–0
	35	20	3⅓	2—7/16	8–15	3–0
	35	30	5	2—7/16	8–15	3–0
	35	36	5	2—7/16	8–15	3–0
	35	51	7½	2—7/16	8–15	3–0
	17	20	3⅓	4—5/16	8–15	5–0
	17	30	5	4—5/16	8–15	5–0
	17	36	5	4—5/16	8–15	5–0
	17	51	7½	4—5/16	8–15	5–0
	28	20	3⅓	4—5/16	8–15	5–0
	28	30	5	4—5/16	8–15	5–0
	28	36	5	4—5/16	8–15	5–0
	28	51	7½	4—5/16	8–15	5–0
3 Ton	18	20	5	2—½	8–15	3–0
	18	30	7½	2—½	8–15	3–0
	18	36	7½	2—½	8–15	3–0
	18	51	10	2—½	8–15	3–0
	35	20	5	2—½	8–15	3–0
	35	30	7½	2—½	8–15	3–0
	35	36	7½	2—½	8–15	3–0
	35	51	10	2—½	8–15	3–0
	15	20	5	4—⅜	8–15	5–0
	15	30	7½	4—⅜	8–15	5–0
	15	36	7½	4—⅜	8–15	5–0
	15	51	10	4—⅜	8–15	5–0
	25	20	5	4—⅜	8–15	5–0
	25	30	7½	4—⅜	8–15	5–0
	25	36	7½	4—⅜	8–15	5–0
	25	51	10	4—⅜	8–15	5–0
4 Ton	17	10	3⅓	4—7/16	10–20	4–0
	17	18	5	4—7/16	10–20	4–0
	17	26	7½	4—7/16	10–20	4–0
	35	10	3⅓	4—7/16	10–20	6–0
	35	18	5	4—7/16	10–20	6–0
	35	26	7½	4—7/16	10–20	6–0
5 Ton	17	10	3⅓	4—½	12–20	5–0
	17	18	7½	4—½	12–20	5–0
	17	26	10	4—½	12–20	5–0
	35	10	3⅓	4—½	12–20	6–0
	35	18	7½	4—½	12–20	6–0
	35	26	10	4—½	12–20	6–0
6 Ton	17	10	5	4—½	10–20	5–0
	17	18	7½	4—½	10–20	5–0
	17	26	10	4—½	10–20	5–0
	35	10	5	4—½	10–20	6–0
	35	18	7½	4—½	10–20	6–0
	35	26	10	4—½	10–20	6–0

Information and Data on Models Above 6-ton Capacity and on Repair Parts on Application

Prices on Request

ELECTRIC HOISTS

YALE "LOAD KING"



Lug type with plain trolley

Portable—Small—Light in Weight—Strong and Durable—Quick Lifting

The Yale "Load King" Electric Hoist was designed to meet the growing demand for a low cost, sturdy and efficient power hoist capable of handling loads up to one ton under normal everyday operating conditions.

To combine top hoisting performance with long-term economy Yale engineers built into every "Load King" all these features: ruggedness and strength, simplicity of design, easy operation and maintenance, small over-all dimensions, light weight, maximum practical use of ball bearings, wire rope for hoisting, push button control, and fast lifting action.

Adaptability

All units, capacities and types of "Load King" Electric Hoists are regularly furnished for adaption in the field to provide:

1—Lug or hook suspension.
2—Plain trolley with suspension parallel to I-beam.
3—Plain trolley with suspension at right angle to I-beam.

This adaptability plus lightness, compactness and portability, make it possible to fit the "Load King" into all kinds of hoisting operations with maximum ease, speed and economy.

Note—Hoist speeds shown in table below are for DC and 60 cycle AC. For 25 or 50 cycle current, the speeds are reduced approximately 15%.

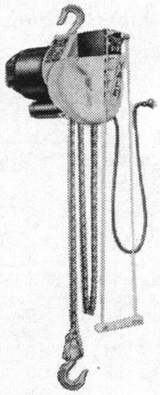
Lug Type

Model, Nos.	**PA¼D10L12**	**PA¼D10L35**	**PA½D10L12**	**PA½D10L25**	**PA½D10L35**	**PA1D10L12**	**PA1D10L16**
Capacity, lbs.	500	500	1000	1000	1000	2000	2000
Hoisting speed, FPM	12	35	12	25	35	12	16
Lift in feet	10	10	10	10	10	10	10
Motor HP	¼	¼	½	¾	1	¾	1
Net wt. each, lbs.	147	152	152	157	152	158	153
Ship. wt. each, lbs.	180	184	184	189	184	190	185
110 or 220 Volts, Sgl. Ph., 60 Cy.	$364.00	418.00	418.00	518.00	......	536.00	......
110 or 220 Volts, Sgl. Ph., 50 Cy.	364.00	418.00	418.00	518.00	......	536.00	......
110 or 220 Volts, Sgl. Ph., 25 Cy.	410.00	464.00	464.00	......	......	......	......
115 or 230 Volts, DC	410.00	464.00	464.00	564.00	......	582.00	......
220-440 or 550 V, 2 or 3 Ph., 50 or 60 Cy.	364.00	418.00	418.00	518.00	545.00	536.00	600.00
220-440 Volts, 2 or 3 Ph., 25 Cy.	410.00	464.00	464.00	564.00	......	582.00	......

Accessory Equipment

Extra for 20 ft. lift (includes hoisting rope, push button cord and anchor chain)	$ 9.60	$ 9.60	$ 9.60	$ 9.60	$ 9.60	$ 9.60	$ 9.60
Steel ball bearing I-beam trolley ...add	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Top hook and adapter ...add	9.00	9.00	9.00	9.00	9.00	18.00	18.00

Trolley hoists can be furnished with Current Collectors complete with Bracket at the following extra charges over price of hoist with trolley: For 2-wire add $36.00; for 3-wire add $51.00; for 4-wire add $66.00.



Hook Type

YALE "MIDGET KING"

Small—Light in Weight—Portable—Strong and Durable

The perfect, low cost, quick-lifting electric hoist for lighter weight loads.

Every "Midget King" Electric Hoist embodies a maximum of ruggedness and strength, simplicity in design, operation and maintenance, small over-all dimensions, maximum use of ball bearings, all of which insure high over-all efficiency.

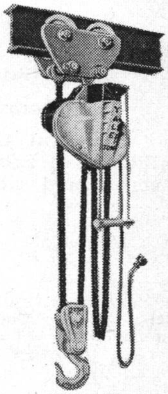
Features

Ample motor capacity; totally enclosed motor brake; enclosed wiring; enclosed controller; one-hand bar grip control; available for any current.

Precision ball bearings throughout; lifetime gears; oil bath lubrication.

Self-acting load brake; drop forged chrome-nickel load sprocket; positive upper and lower limit stops; tru-guide chain guide and stripper; heavy duty roller chain; safety load hook.

Note—The hoist speeds shown in the table below are for DC and 60 cycle AC current. For 25 or 50 cycle current the speeds are reduced approximately 15%.



Trolley Type

	Hook Type											Trolley Type	
Model, Nos.	**⅛E34H**	**¼E17H**	**¼E34H**	**½E17H**	**½E24H**	**½E34H**	**1E9H**	**1E13H**	**1E17H**	**2E6½H**	**2E8½H**	**2E6½P**	**2E8½P**
Capacity, lbs.	250	500	500	1000	1000	1000	2000	2000	2000	4000	4000	4000	4000
Hoisting speed, FPM	34	17	34	17	24	34	9	13	17	6½	8½	6½	8½
Lift in feet	10	10	10	10	10	10	10	10	10	10	10	10	10
Motor HP	¼	¼	½	½	¾	1	½	¾	1	¾	1	¾	1
Standard I-beam size, in.	4–8	4–8	4–8	4–8	4–8	4–8	4–9	4–9	4–9	6–10	6–10	6–10	6–10
Net wt. each, lbs.	81	81	84	84	88	82	100	105	105	155	155	185	185
Ship. wt. each, lbs.	99	91	102	102	106	100	134	140	140	190	190	225	225
110 or 220 V., Sgl. Ph., 60 Cy.	$240.00	285.00	338.00	375.00	395.00	......	385.00	395.00	......	505.00	......	565.00	......
110 or 220 V., Sgl. Ph., 50 Cy.	240.00	285.00	338.00	375.00	395.00	......	385.00	395.00	......	505.00	......	565.00	......
110 or 220 V., Sgl. Ph., 25 Cy.	270.00	305.00	370.00	407.00	......	......	417.00	......	......	......	......	......	......
115 or 230 Volts, DC	260.00	305.00	358.00	395.00	420.00	......	405.00	430.00	......	540.00	......	600.00	......
220 or 440 V., 2 or 3 Ph., 60 or 50 Cy.	240.00	285.00	338.00	375.00	395.00	410.00	385.00	405.00	425.00	515.00	535.00	575.00	595.00
220 or 440 V., 3 Ph., 25 Cy.	284.00	319.00	370.00	407.00	431.00	......	417.00	441.00	......	551.00	......	611.00	......
Extra Lift—Per foot	2.50	2.50	2.50	2.50	2.50	2.50	4.50	4.50	4.50	9.00	9.00	9.00	9.00
Steel Ball Brg. I-Beam Trly.	24.40	24.40	24.40	24.40	24.40	24.40	28.50	28.50	28.50	64.60	64.40	......	......

All above, one in a box.

Repair Parts are Available—Prices on Request

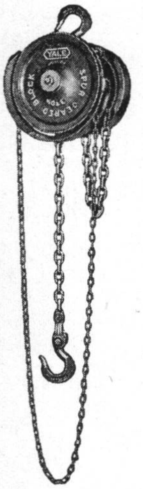
CHAIN HOISTS

The Differential is the least efficient, as well as the cheapest of three types of hoists. Keeping the loads suspended by means of friction in the parts of the hoist, it offers an efficiency of only 35%.

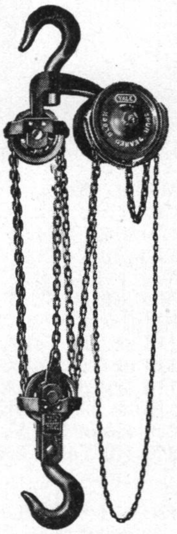
The Screw-Geared Hoist costs more than the Differential, but makes up for the added cost by giving a mechanical efficiency of 40%. Although it requires less operating effort, it still holds its loads in suspension by use of the friction principle. Due to small amount of efficiency we recommend the Spur-Geared.

The Spur-Geared Hoist offers the greatest advance in hand-hoisting mechanism. Holding its load in suspension by an automatic brake it is able to return a mechanical efficiency of 85%. Thus, though in cost it is the most expensive of the three—for purposes where use is frequent it is actually the most economical.

YALE, BALL BEARING, SPUR-GEARED



1 ton BB



5 and 6 tons BB

Mechanism—Spur-gear reduction, planetary system. Gears mounted on bronze anti-friction bearings, oil duct lubrication. Gear pressure so balanced that thrust is diametrically opposed, setting up a minimum of stress and maintaining initial high efficiency.

Suspension—All members in suspension are steel.

Brake—Screw and disc type load brake, self-actuating, of ample area, with ratio of brake pressure increasing in proportion to increase in load.

Bearings—Load sheave on which suspended load is lifted, is mounted on two radial thrust type ball bearings, using high carbon chrome alloy steel balls and chrome vanadium races—bearings enclosed with dust-proof metal and felt oil retaining rings. Load sheave bearing ground concentric, with .001 in. working tolerance. Driving pinion shaft hardened and ground with .001 in. working tolerance, and revolves in bronze bushings in load sheave—gear and pinions provided with bronze bushings.

Chain—Made exclusively of steel. Formed, welded, heat-treated, tumbled, and gauged by a controlled process that provides the following physical characteristics:

1—Chain having the necessary ductility and toughness to withstand heavy intermittent loads, and the characteristics whereby it will stretch before breaking.

2—Uniformity as to size, with all links gauged on master gauges for accuracy of pitch and over all dimensions.

3—A minimum strength at the weld equal to the ultimate strength of the chain.

4—Exclusive Super-Plating, that is practically impervious to rust—cuts friction to new minimum—and greatly increases chain life.

Safety Load Hooks—Drop forged steel—will open slowly without fracture under severe overload—provides warning of danger and permits depositing the load without injury to operator, load, or hoist mechanism. Free, easy, and universal movement provided by swiveling on heavy duty ball bearings and swinging or rocking on a crosshead. Ball bearings totally enclosed against foreign matter.

Detachable Shackles—Drop forged, two-piece, with heated suspension pin—permits changing or replacing load chain without welding.

Hand Chain Guide—Continuous and adjustable which prevents fouling of hand chain.

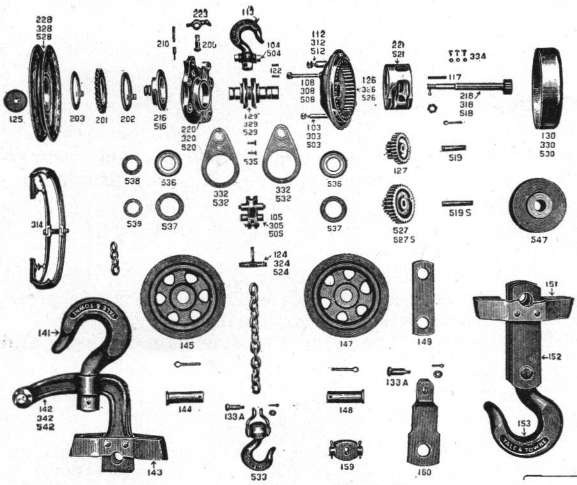
Lubrication—Hoisting gears, oil and grease—bearing and brake, oil ducts with Alemite fittings.

General Characteristics—Design and construction contemplates maximum in safety; high lifting capacity and speed with a minimum of hand chain pull and overhaul; uniformly low headroom and over all dimensions; minimum of weight consistent with strength and safety.

Cap., tons	Model	Complete, each	Extra Lift Per foot	Extra Lift Chain, feet		Length, std. chain, ft.		Travel of lower hook or std. lift, ft.	Test load in long tons	Minimum distance betw. hooks, in.	Net wt. each, lbs.	Ship. wt. each, lbs.	Chain pull to lift full load, lbs.	Chain overhauled to lift load one foot, ft.	Hoisting speeds, ft. per min.		
				Load	Hand	Load	Hand								Full load	Half load	Qtr. load
¼	BB	$115.00	$ 3.60	1	2	9	16	8	⅜	12	62	75	47	12½	17	30	45
½	BB	115.00	3.60	1	2	9	16	8	¾	12	62	75	57	21	8½	17	26
1	BB	148.00	3.80	1	2	9	16	8	1½	15½	94	115	76	31	4¼	8.5	13
1½	BB	198.00	4.00	1	2	9	16	8	2¼	18	136	170	103	35	5.1	10.2	15.3
2	BB	230.00	4.20	1	2	10	18	9	3	21	204	244	112	42	3.9	7.8	11.7
3S	BS	300.00	5.20	1	2	11	22	10	4½	23	269	324	102	77	2.5	5.0	7.5
3	BB	300.00	6.00	2	2	24	22	10	4½	32	212	260	107	70	2.5	5.0	7.5
4	BB	360.00	6.40	2	2	25	24	10	6	37	301	358	116	84	1.9	3.8	5.7
5	BB	460.00	8.60	3	2	44	29	12	7½	45	413	474	102	126	1.4	2.8	4.2
5D	BS	460.00	8.40	2	2	29	29	12	7½	34	388	461	90	154	1.4	2.8	4.2
6	BB	545.00	8.60	3	2	44	29	12	9	45	413	474	122	126	1.2	2.4	3.6
6D	BS	545.00	8.40	2	2	29	29	12	9	34	388	461	108	154	1.2	2.4	3.6
8	BB	660.00	10.80	4	2	58	30	12	12	49	502	578	127	168	.85	1.7	2.6
10	BB	790.00	13.00	5	2	72	30	12	15	54	612	702	132	210	.65	1.3	2.0
12	BB	1145.00	17.20	6	4	93	30**	12	18	54	860	1140	122‡	126‡	1.2	2.4	3.6
16	BB	1430.00	21.60	8	4	117	30**	12	24	62	1046	1330	127‡	168‡	.85	1.7	2.6
20	BB	1800.00	26.00	10	4	146	30**	12	30	62	1230	1530	132‡	210‡	.65	1.3	2.0
25	BB	2000.00	26.00	10	4	146	30**	12	37½	62	1250	1550	165‡	210‡	.50	1.0	1.5
30	BS	3500.00	34.80	14	4	194	30**	12	45	64	2150	3250	118‡	385‡	.40	.8	1.2
40	BS	4450.00	48.80	14	4	206	30**	12	60	71	5200	6500	120‡	539‡	.30	.6	.9

S—Single Chain D—Double Chain (‡) For each hand chain **Two hand chains.

One in a box.



CHAIN HOISTS

PARTS FOR YALE SPUR-GEARED HOISTS

For Models BB, BS and SS

Specify model, capacity and number of part.
Prices for parts for 300 lb. hoist, use same prices as for ¼ ton parts.

Prices Each

	Part Nos.		For Hoists								
Part Name	Model SS	Models BB and BS	¼ ton	½ ton	1 ton	1½ ton	2 ton	3 ton double load chain	3 ton single load chain Model BS	4 to 25 ton	5 and 6 ton double load chain Model BS
Top Hook and Nut	113	113	$ 3.70	$ 3.70	$ 5.90	$ 7.30	$ 8.80	$.....	$17.60	$.....	$.....
Disc Hub Key	117	117	.30	.30	.36	.38	.40	.38	.40	.40	.40
Load Sheave Key	122	122	.18	.18	.20	.30	.34	.30	.34	.34	.34
Check Washer	125	125	1.30	1.30	1.80	2.20	2.50	2.20	2.50	2.50	2.50
Gear and Pinion	127	127	5.20‡	5.20‡	6.60	8.80	11.80	8.80	....	11.80	....
Pawl Stud	200	200	1.00	1.00	1.50	1.80	1.90	1.80	1.90	1.90	1.90
Ratchet Disc	201	201	3.00	3.00	4.00	5.20	5.90	5.20	5.90	5.90	5.90
Leather Disc	202	202	1.90	1.90	2.20	2.90	2.90	2.90	2.90	2.90	2.90
Galvanized Iron Disc	203	203	.60	.60	.90	1.20	1.50	1.20	1.50	1.50	1.50
Pawl Spring and Rod	210	210	.30	.30	.50	.60	.60	.60	.60	.60	.60
Pawl	223	223	1.20	1.20	1.50	1.80	1.80	1.80	1.80	1.80	1.80
Hand Chain Guide	314	314	8.80	8.80	10.30	14.70	17.60	14.70	17.60	17.60	17.60
Gear Cover Screw and Washer.	334	334	.06	.06	.06	.06	.06	.06	....	.06	....
Small Separator and Nut	303	503	1.20	1.20	1.50	1.80	2.20	1.80	2.20	2.20	2.20
Top Crosshead	104	504	2.20	2.20	3.20	4.70	5.90	....	5.90	....	....
Load Chain Guide and End Bolt	305	505	2.20	2.20	2.90	4.40	5.10	4.40	7.00	5.10	7.00
Load Chain Guide Bolt and Nut	308	508	.60	.60	1.10	1.20	1.50	1.20	1.50	1.50	1.50
Large Separator and Nuts	312	512	1.90	1.90	2.20	2.70	2.90	2.90	2.90	2.90	2.90
Disc Hub	216	516	7.00	7.00	8.80	13.20	16.20	13.20	16.20	16.20	16.20
Driving Pinion	318	518	8.80‡	8.80‡	10.30	14.70	17.60	14.70	17.60	17.60	17.60
Gear and Pinion Pin	119	519	1.30‡	1.30‡	1.80	2.20	2.70	2.20	2.70	2.70	2.70
Alemite Fitting	...	519A	.10	.10	.10	....	....	....	....	....	....
Gear and Pinion Pin	...	519S	....	....	....	....	....	....	2.70	....	2.70
Ratchet Case	320	520	8.80	8.80	13.20	17.60	19.10	17.60	19.10	19.10	19.10
Alemite Fitting	...	520A	.10	.10	.10	.10	.10	.10	.10	.10	.10
Pinion Cage	†221	†521	7.30‡	7.30‡	10.30	14.70	19.10	14.70	29.00	19.10	29.00
Stripper	324	524	1.00	1.00	1.00	1.50	1.80	1.50	1.80	1.80	1.80
Internal Gear	326	526	14.70	14.70	17.60	25.00	28.00	25.00	28.00	28.00	28.00
Gear and Pinion	...	527	.....	.....	.....	.....	.....	.....	13.50	.....	13.50
Gear and Pinion	...	527S	.....	.....	.....	.....	.....	.....	13.50	.....	13.50
Hand Wheel	328	528	8.80‡	8.80‡	10.30	14.70	17.60	14.70	17.60	17.60	17.60
Alemite Fitting	...	528A	.08	.08	.08	.08	.08	.08	.08	.08	.08
Load Sheave	†329	†529	14.70	14.70	17.60	26.50	29.40	26.50	36.00	29.40	36.00
Gear Cover	330	530	4.40‡	4.40‡	6.60	10.30	11.80	10.30	13.00	11.80	13.00
Name Plate Disc	...	530A	.40	.40	.40	.40	.40	.40	.40	.40	.40
Suspension Plate	332	532	3.00	3.00	5.90	8.80	11.00	8.80	11.00	11.00	11.00
Ball-Bear'g Lower Swivel Hook	...	533	9.30	9.30	13.00	16.00	21.60	....	25.00	.....	.....
Detach. Shack. Bolt. Nut, Cotter	...	533A	.36	.36	.36	.36	.36	....	.64	.....	.....
Detachable Shackle Link	...	533B	.60	.60	.60	1.00	1.00	....	1.30	.....	.....
Bot. Crosshead Wash. (not ills.)	...	533C	.10	.10	.10	.10	.10	....	.10	.....	.....
Suspension Plate Rivet	...	534	....	....	....	....	....	....	.06	.....	.....
Gear Cover Screw and Washer	...	535	....	....	....	....	....	....	.06	.....	.....
Ball Bearing Complete	...	536	7.40	7.40	9.50	10.50	12.60	10.50	19.50	12.60	19.50
Inner Oil Retainer	...	537	.80	.80	1.10	1.30	1.50	1.30	1.50	1.50	1.50
Outer Felt Retainer	...	538	.10	.10	.12	.12	.12	.12	.30	.12	.30
Outer Felt Washer	...	539	.10	.10	.12	.12	.12	.12	.30	.12	.30
Load Chain, only Steel, per ft..	...	...	1.60	1.60	1.80	2.00	2.20	2.00	3.20	2.20	3.20
Hand Chain, Steel, per ft.	...	...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Load Chain—Size	...	...	⁹⁄₃₂L	⁹⁄₃₂L	⅜L	⁷⁄₁₆	½	⁷⁄₁₆	⁹⁄₁₆	½	⁹⁄₁₆
Hand Chain—Size	...	...	¼	¼	¼	¼	¼	¼	¼	¼	¼

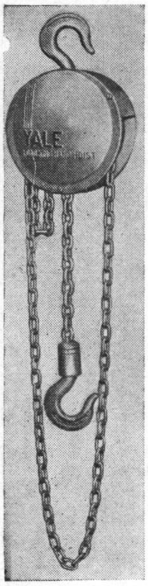
Additional Parts For 3 to 25 Ton Hoists Inclusive

		Part Nos.		For Hoists									
Part Name		Model SS	Models BB and BS	3 ton	4 ton	5 ton triple load chain	6 ton triple load chain	5 and 6 ton double load chain Model BS	8 ton	10 ton	12 ton	16 ton	20 and 25 ton
Top Hook and Nut	Top Block	141	141	$17.60	$26.50	$35.30	$35.30	$35.30	$ 73.50	$103.00	$110.30	$147.00	$323.60
Top Yoke		342	542	41.20	61.80	73.50	88.20	53.00	117.60	176.50	191.20	206.00	220.60
Top Guard and Guides		143	143	.....	.....	20.60	29.40	.....	35.30	44.00	47.00	50.00	53.00
Top Sheave Pin		144	144	.....	.....	3.70	7.30	.....	8.80	10.30	10.30	13.20	17.60
Top Sheave		145	145	.....	.....	13.20	13.20	.....	13.60	17.60	17.60	17.60	17.60
Top Cross Pin		342S	542S	4.40	4.40	4.40	4.40	4.40	4.40	4.40	4.40	4.40	4.40
Number of Sheaves		...	...	0	0	1	1	0	1	2	2	3	4
Bottom Sheave	Bottom Block	147	147	11.80	13.20	13.20	13.20	.....	13.20	17.60	17.60	17.60	17.60
Bottom Sheave		...	547	.....	.....	.....	.....	21.50	.....	.....	.....	.....	.....
Number of Sheaves		...	...	1	1	1	1	1	2	2	3	4	5
Bottom Sheave Pin		148	148	2.90	3.70	4.40	8.00	4.40	8.80	10.30	10.30	13.20	17.60
Becket Straps		149	149	....	....	14.70	22.00	....	26.50	29.40	.....	.....	.....
Bottom Guards and Guides		151	151	16.20	22.00	22.00	29.40	....	35.30	44.00	47.00	50.00	58.80
Bot. Side Plates and Crosshead		152	152	14.70	20.60	28.00	47.00	....	58.80	73.50	73.50	79.40	85.30
Bottom Hook and Nut		153	153	17.60	26.50	35.30	35.30	35.30	73.50	103.00	110.30	147.00	323.60
Detach. Shac. Crossh'd and Bolt		159	159	.....	.....	7.60	7.60	.....	.....	......	......	......	......
Detach. Shackle Plate and Bolt		160	160	.....	.....	.....	.....	.....	12.70	12.70	......	......	......
Bottom Guard and Guide		...	551	.....	.....	.....	.....	22.00	.....	......	......	......	......
Bot. Side Plate and Crosshead		...	552	.....	.....	.....	.....	28.00	.....	......	......	......	......

Open stock.

CHAIN HOISTS

YALE LOAD KING



Light Weight Aluminum and Steel Alloy

Compact—Light Weight

High strength aluminum alloy castings and alloy steels, fewer parts—these factors provide the "carry-around" lightness of the Load King. The ½ ton model weighs only 37 lbs. Larger capacities likewise provide unusual lightness for moving the hoist job-to-job in a hurry.

Greater Efficiency

Efficiency up to 95%. It takes only 20 seconds to lift a 1000 lb. load 3 ft. In a minute 2 tons can be lifted 2.1 ft. Such fast performance is due to minimized friction: all rotating shafts have ball bearings, parts are precision machined, and the powerful, revolutionary Synchromatic load brake acts quick as a wink.

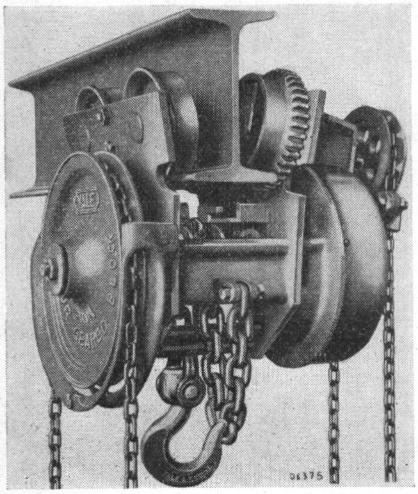
Has the same specifications as the regular spur-geared hoist besides the advantages of compactness and lightness.

Two feet of hand chain for each foot of extra lift.

Capacity, tons	Complete Standard Lift, each	Travel of lower hook or std. lifts, ft.	Extra Lift, per foot	Length standard chain, ft.		Test load, long tons	Min. dist. between hooks, in.	Net wt. each, lbs.	Ship. wt. each, lbs.	Chain pull to lift full load, lbs.	Chain overhauled to lift load, 1 ft., ft.	Hoisting speeds, ft. per min.		
				Load	Hand							Full load	Half load	Quarter load
½	$108.00	8	$4.00	9	14	¾	12¼	36	38	48	22	9	18	27
1	138.00	8	4.20	9	14	1½	14	41	43	77	27.2	4.5	9	13.5
1½	184.00	8	4.50	9	14	2¼	18	62	64½	85	40	2.8	5.6	8.4
2	215.00	9	4.80	10	16	3	19	73	75½	94	48.4	2.1	4.2	6.3

One in a box.

YALE TROLLEY TYPE, BALL BEARING, SPUR-GEARED



Capacities ¼ Ton to 10 Tons

For years, this efficient headroom-saver has also been known as the Army Type of Yale Spur-Geared Hoist.

A special method of suspension has been adopted that makes it possible to build a Yale Ball Bearing Spur-Geared Hoist directly into a Yale Plain Steel-Plate Trolley, creating a headroom clearance markedly greater than that achieved by the Clevis Type Hoist.

In a 1-ton size, this special combination actually saves a foot of headroom! As the hoist capacity increases the headroom saved increases correspondingly—ultimately reaching a zenith of 2¼ feet!

Should even this hoist prove unequal to meeting the requirements of your headroom problem, the "Rail Hugger" developed by Yale is what you need.

Clamping Device—Anchors the trolley hoist to the beam—extra $20.00 per hoist, list.

Rated capacity, tons	Complete, each		Lift, ft.	Extra Lift, per foot		Standard size of I-beam, in.	Minimum distance from bottom of I-Beam to inside lower hook, in.		Net wt. each, lbs.	
	Plain Type	Geared Type		Plain	Geared		Plain	Geared	Plain	Geared
¼	$ 240.00	$	8	$ 3.60	$	5	8½	....	95	...
½	240.00	.....	8	3.60	....	5	8½	....	95	...
1	300.00	370.00	8	3.80	5.80	6	10½	10½	135	188
1½	390.00	455.00	8	4.00	6.00	7	12	12	207	255
2	440.00	510.00	9	4.20	6.20	8	14¼	14¼	301	360
3	515.00	610.00	10	5.20	7.20	9	16¾	16¾	403	450
4	650.00	860.00	10	6.40	8.40	10	22	22	492	580
5	890.00	980.00	12	8.40	10.40	12	23	23	621	705
6	1095.00	1185.00	12	8.40	10.40	12	23	23	621	705
8	1215.00	1485.00	12	10.80	12.80	15	38	38	830	920
10	1410.00	1700.00	12	13.00	15.80	15	40½	40½	1060	1160

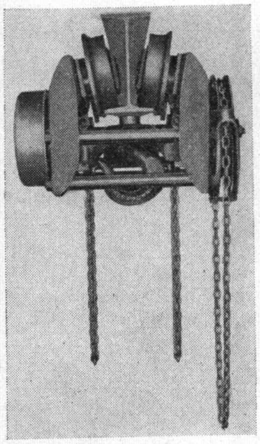
Note—Prices on parts for Trolley Hoists on request. Many parts for Trolley Hoists are special. Specify model, capacity, size and section of I-Beam required. Also marking stamped on name plate on gear cover. Trolley Hoists for operation on I-Beam smaller than standard, prices on application. Trolley Hoists will be widened to suit larger beams than standard up to the maximum as mentioned above at no additional charge.

Plain Type. ¼-Ton to 3 tons can be furnished to operate on I-Beams one size smaller than standard at no extra cost. Geared Type cannot be furnished for I-Beams smaller than standard.

One in a box.

CHAIN HOISTS

YALE RAIL HUGGER



Here is the hoist that will effectively settle any headroom problem. A product of Yale Engineering ingenuity, the Rail Hugger is the greatest headroom saver of them all. By virtue of a turtle-like arrangement, a mechanism was created that makes it possible for the load hook to be brought right up to the trolley rail. This provides the shortest headroom available in a hand hoist. Thus, depending upon the hoist capacity involved, it is now possible to effect headroom savings from 18 in. to 5 ft. 1 in.

Gears are mounted on bronze anti-friction bearings, oil duct lubrication.

All members in suspension are steel. Load brake is screw and disc type. Load sheaves are mounted on two ball bearings, radial thrust type, using high carbon chrome alloy steel balls and chrome vanadium races. Bearings are enclosed.

Formed, welded, heat-treated, tumbled and gauged chain.

Drop forged steel safety load hooks.

Continuous and adjustable hand chain guide prevents fouling of hand chain.

Trolley frame consists of an outer and inner steel plate, parallel with each other, connected and supported by a steel separator block and through bolts. Chilled iron wheel treads. Two Timken roller bearings in wheel. Hoisting gears oiled and greased. Oil duct bearings and brake. Alemite fittings on wheels.

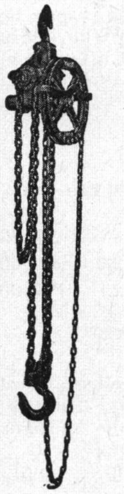
All parts are fully tested and inspected.

Rated Cap., tons	Plain Trolley Type		Geared Trolley Type		Standard size of I-Beam		Maximum size of I-Beam,		Travel of lower hook or std. lift, ft.	Test load in long tons	Chain pull to lift full load, lbs.	Chain overhauled to lift load one ft., ft.	Speed for 2 men, ft. per minute	Approximate net wt. each, lbs.	
	Complete, each	Extra Lift, per foot	Complete, each	Extra Lift, per foot	in.	lbs.	in.	lbs.						Plain	Geared
¼	$ 700.00	$ 5.00	$	$.....	5	10	8	18.4	8	⅜	60	10	17	117	...
½	700.00	5.00	......	.....	5	10	8	18.4	8	¾	63	19	8.5	117	...
1	700.00	5.20	......	.....	6	12.5	8	18.4	8	1½	83	28	4.25	136	...
1½	860.00	8.40	935.00	10.40	7	15.3	24	120	8	2¼	69	56	5.1	275	308
2	900.00	8.40	970.00	10.40	8	18.4	24	120	9	3	92	56	3.9	325	352
3	920.00	8.80	1000.00	10.80	9	21.8	24	120	10	4½	115	68	2.5	450	477
4	1165.00	9.20	1280.00	11.20	10	25.4	24	120	10	6	121	86	1.9	653	683
5	1385.00	10.00	1500.00	12.00	12	31.8	24	120	12	7½	92	161	1.4	925	955
6	1520.00	10.00	1665.00	12.00	12	31.8	24	120	12	9	110	161	1.2	925	955
8	2170.00	10.80	2425.00	12.80	15	42.9	24	120	12	12	130	168	.85	1480	1520
10	3150.00	14.80	3420.00	16.80	15	42.9	24	120	12	15	130	242	.65	1880	1920
12	3525.00	14.80	3820.00	16.80	15	42.9	24	120	12	18	160	242	.45	1880	1920
16	4100.00	19.60	4430.00	21.60	20	65.4	24	120	12	24	150	336	.30	2400	2460
20	4680.00	27.60	4895.00	29.60	20	65.4	24	120	12	30	150	484	.20	2750	2820
24	4860.00	27.60	5095.00	29.60	24	79.9	24	120	12	36	180	484	.15	2760	2830

Note—Prices on parts for Rail Hugger Hoists on request.

One in a box.

YALE, SCREW GEARED



For light jobs not demanding the super-speed and efficiency of spur-geared hoists, the Yale Screw-Geared Hoist perfectly fits the requirements. Operating on a worm gear reduction, it can always be relied upon to give smooth and dependable service.

The self-actuating load-brake securely holds the load in any position and will not release it until the hand chain is pulled.

Safe and durable—ruggedly stand the test of time. Light and portable they thoroughly promote flexibility and freedom of operation.

Tested to 50 per cent overload, long ton rating 2240 pounds.

Rated Cap., tons	Complete each	Regular lift, ft.	Minimum distance between hooks, in.	*Extra Lift, per foot	Test load in tons of 2240 lbs.	Standard chain, lineal feet		Chain pull to lift full load, lbs.	Chain overhauled to lift load one foot, ft.	Net. wt. each, lbs.	Ship. wt. each, lbs.
						Load	Hand				
½	$ 97.00	8	13¼	$5.00	¾	18	16	68	40	46	56
1	113.00	8	16	5.20	1½	18	16	87	59	60	73
1½	157.00	8	19¼	5.40	2¼	18	16	94	80	82	100
2	185.00	9	21	5.60	3	20	18	115	93	105	130
3	243.00	10	25½	6.00	4½	24	21	132	126	188	234

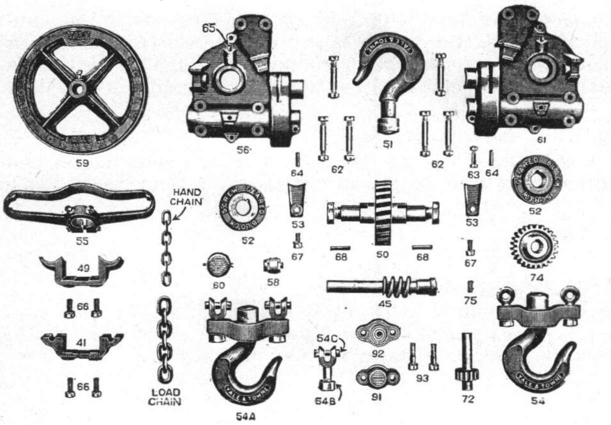
*Includes hand and load chain.

One in a box.

Note—See next page for parts for Screw Geared Hoists.

CHAIN HOISTS

PARTS FOR YALE SCREW GEARED HOISTS



*When ordering hand wheels or hand chain give number of pockets in rim of wheel.

†Hand chain for old model Hoists $0.75 per ft., for ½, 1, 1½, 2 and 3 ton sizes. $0.80 per ft., for 4 and 5 ton sizes.

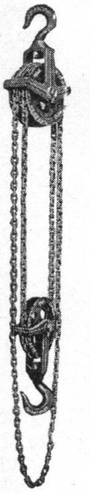
Note—When ordering parts it is necessary to give the size of the Hoist in addition to the part number.

Prices Each

No.	Part Name	Capacity, tons ½	1	1½	2	3	4	5
41	Load Chain Guide	$ 1.70	$ 2.00	$ 3.40	$ 4.30	$ 5.00	$ 5.70	$ 8.60
45	Worm and Shaft	8.60	11.40	17.10	20.00	25.70	28.60	34.30
49	Load Chain Guard	2.40	2.90	4.30	5.00	5.70	6.40	8.60
50	Worm Wheel	14.30	17.10	24.30	34.30	48.60	57.20	85.70
51	Top Hook and Nut	3.60	5.70	8.60	12.90	21.40	28.60	42.90
52	Load Sheave, per pair	5.70	7.90	11.40	12.90	17.10	21.40	28.60
53	Strippers, per pair	.90	1.10	1.70	2.20	3.60	4.30	5.70
54	Bottom Hook Crosshead and Eye Bolts	7.20	10.00	12.90	17.10	28.60	40.00	57.20
54A	Bottom Hook Crosshead with New Detachable Shackles	7.20	10.00	12.90	17.10	28.60	.....	.....
54B	Detachable Shackle and Nut	1.00	1.10	1.20	1.40	1.50	.....	.....
54C	Detachable Bolt, Nut and Cotter	.30	.30	.30	.30	.30	.....	.....
55	Hand Chain Guide	5.00	5.70	8.60	11.40	12.90	15.70	15.70
56 61	Housing, per pair	18.60	22.90	34.30	42.90	60.00	85.70	171.40
58	Friction Plug	2.90	4.30	5.70	7.20	.....	.....	.....
59	*Hand Wheel	6.40	7.90	11.40	13.60	15.70	22.90	25.70
60	Friction Plug Cover	1.40	1.40	2.20	2.90	.....	.....	.....
62	Housing, Through Bolt and Nuts	.36	.38	.38	.40	.40	.40	.80
63	Housing, End Bolt and Nut	...	...	...	...	.40	.40	.80
64	Housing, Dowel Pin	.10	.10	.10	.10	.20	.20	.20
65	Housing, Oil Hole Plug	.10	.10	.10	.10	.10	.10	.10
66	Guard and Guide Bolt and Washer	.18	.20	.20	.20	.24	.24	.34
67	Stripper Bolt and Washer	.18	.20	.20	.20	.24	.28	.34
68	Load Sheave Key	.10	.10	.10	.10	.10	.10	.20
72	Pinion Shaft	...	...	...	...	11.40	12.90	20.00
74	Gear	...	...	...	...	12.00	13.60	15.00
75	Gear Key	...	...	...	...	.10	.10	.10
91	Friction Plug Cover	...	...	...	...	1.40	1.40	1.40
92	Friction Plug	...	...	...	...	8.60	8.60	11.40
93	Friction Plug Cover Bolt	...	...	...	...	.18	.18	.30
	Load Chain, Steel, per ft.	1.50	1.60	1.70	1.80	2.00	2.20	3.20
	†Hand Chain, Steel, per ft.	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Open stock.

YALE DIFFERENTIAL



The simplest form of lifting mechanism, but its outstanding performance is equal, in its class, to that of any Yale hoist. Laborers, garage men, machine shop workers, find that the Yale Differential gives added safety to operations. Requiring less operating effort, it speeds activites, steps up efficiency.

All parts are fully tested and inspected as regards heat-treatment, grade of finish, chemical and physical analysis of material, performance and fit in the unit, and checked with limit gauges for size, accuracy and interchangeability.

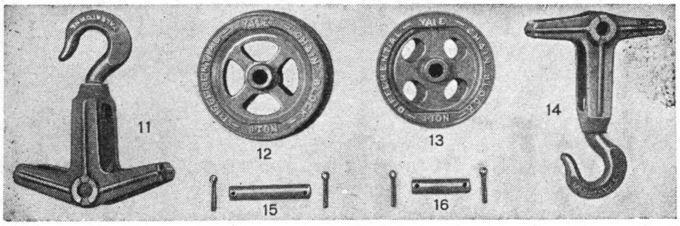
Cap., tons	Each	§Extra Lift, per foot	Reg. lift, ft.	Min. dist. bet. hooks, in.	†Chain pull, lbs.	†Chain pull, ft.	Wt. each, lbs. Net	Shipping
¼	$24.00	$6.00	6	17	72	18	23	24
½	28.00	6.00	7	21	110	24	30	32
1	44.00	6.40	8	26	190	30	50	55
1½	56.00	6.80	8½	32	225	36	81	94

†Figures denote the pull in pounds required to lift the full load, and number of feet chain overhauled to lift the load one foot.

§Each foot of extra lift includes 4 ft. of chain.

One in a box.

PARTS FOR YALE DIFFERENTIAL HOIST

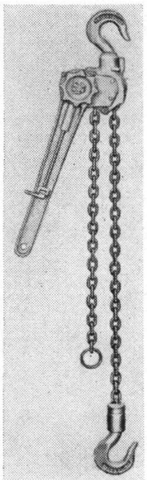


Prices Each

Nos.	Name	Capacity, tons ¼	½	1	1½
11	Top Yoke and Hook	$5.00	$6.00	$ 8.50	$11.00
12	Top Sheave	6.25	8.00	12.00	16.80
13	Bottom Sheave	1.80	2.40	3.00	3.80
14	Bottom Yoke and Hook	4.00	5.00	7.00	9.00
15	Top Sheave Pin	.80	1.00	1.00	1.20
16	Bottom Sheave Pin	.60	.80	.80	1.00
	Hook and Nut Only (Top or Bot.)	2.50	3.00	4.50	6.00
	Regular Chain ....Per foot	1.50	1.50	1.60	1.70

Open stock.

YALE MODEL D LINK CHAIN PUL-LIFT



Alloy Steel Link Chain

Hardened to give high strength and toughness for long wear. Links are electrically welded, checked to close limits on master gauges for pitch and over all dimensions; provide a flexible chain that cannot kink. Chain is kept in place on the sheave by a hardened steel load chain guide.

Drop forged steel safety hooks, heat treated. Malleable iron housing of great tensile strength. Bottom hook supported in bottom block on a heavy duty ball thrust bearing with lifetime lubrication.

Die cast aluminum operating handle; short radius permits operating in cramped quarters. Screw and disc type self-actuating load brake. Hand wheel, interlocked with load brake, permits brake to be released and frees the link chain so it may be operated either by hand or directly on the chain without using the handle. Drop forged alloy steel load sprocket.

Cap., tons	Standard Lift Complete, each	Standard lift, in.	Extra Lift, per foot	Complete with Special Lifts 5 ft.	8 ft.	10 ft.	15 ft.
¾	$53.00	55	$2.00	$53.83	$ 59.83	$ 63.83	$ 67.83
1½	74.00	53	2.20	75.29	81.89	86.29	90.69
3	94.00	54	4.40	96.20	109.40	118.20	127.00

Specifications

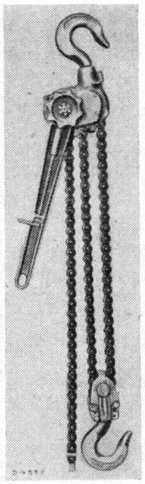
Cap., tons	Pull on lever to lift full load, lbs.	Lgth. of lever, in.	Min. dist. between hooks, in.	Hoisting speed with full load, FPM	Wt. ea., standard lift, lbs. Net	Shipping	Standard length of chain, ft.
¾	72	17½	13	4	15	16	5
1½	74	17½	15	2	25	27½	5
3	82	17½	17	1	36	39	10

One in a box.

Note—See next page for Standard Pul-Lift.

CHAIN HOISTS

YALE PUL-LIFT



Whether the job be one of pulling or lifting makes little difference to the Pul-Lift—it handls both with equal ease and efficiency. Operated by means of short strokes on a ratchet handle, load is supported on brake at every point of lifting action—absolute safety insurance. In addition the self-actuating brake minimizes possibility of a flying handle. Designed for one man operation, it produces maximum results speedily, economically and efficiently.

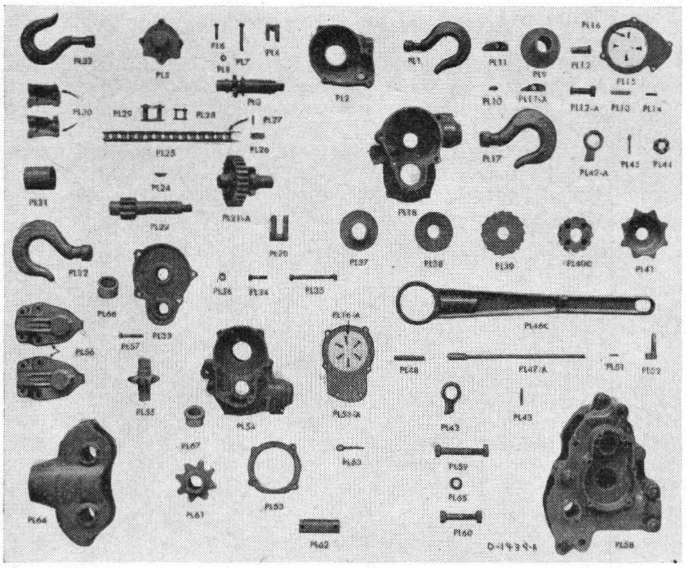
Immediately adaptable to any lifting or pulling job that requires a light, compact, rugged tool.

Cap., long tons	Each	**Extra Lift,** per ft.	Min. dist. between hooks, in.	Lift in in.	*Pull on lever, lbs.	Lgth. chain, ft.	Lgth. lever, in.	Hoisting speed with full load	Net wt. each, lbs.	Ship. wt. each, lbs.	**Complete, with SpecialLifts** 5 ft.	8 ft.	10 ft.	12 ft.
¾	$ 53.00	$ 1.30	12	55	70	5	17 7/16	4 ft.	17	18½	$ 53.55	$ 57.45	$ 60.05	$ 62.65
1½	74.00	2.35	14	53	80	5	17 7/16	2 ft.	30	32	75.35	82.40	87.10	91.80
3	94.00	4.70	17¾	54	89	10	17 7/16	1 ft.	42	44	96.35	110.45	119.85	129.25
4½	172.00	7.05	23	52	96	15	17 7/16	9 in.	62	83	176.70	197.85	211.95	226.05
6	182.00	9.40	23½	52	107	20	17 7/16	6 in.	82	107	188.25	216.45	235.25	254.05
15	587.00	18.80	31	60	86	..	17 7/16	3 in.	243	295	587.00	643.40	681.00	718.60

*Figures denote the pull on lever in pounds required to lift full load.

One in a carton.

PARTS FOR YALE PUL-LIFT



Parts PL19 sprocket and PL21 Gear (not illustrated) were originally furnished on Pul-Lifts using the PL53 cover. In replacing this sprocket and gear for this model specify PL21B gear and sprocket which is made in one piece.

In the Model "C" Pul-Lift, parts PL40C and PL46C and an extra part PL38 replace parts PL40 and PL46 on previous models. The two Raybestos or Friction discs Part PL38 placed on each side of the ratchet disc part PL39 must be **operated dry**.

Prices Each

		For hoist, ton				
Nos.	Name of part	¾	1½	3	4½	6
PL1	Top Hook and Nut	$2.45	$.....	$.....	$.....	$.....
PL2	Housing—¾-Ton	5.85	.....	.....	.....	.....
PL3	Sprocket	8.80	.....	.....	.....	.....
PL4	Stripper	.60	.....	.....	.....	.....
PL5	Housing Cover	2.95	.....	.....	.....	.....
PL6	Cover Cap Screw	.07	.....	.....	.....	.....
PL7	Stripper Cap Screw ...	.06	.....	.....	.....	.....
PL8	Lockwasher—¼"	.01	.....	.....	.....	.....
PL9	Disc Hub	2.95	.....	.....	.....	.....
PL10	Disc Hub Key	.30	.....	.....	.....	.....
†PL11A	Load Brake Pawl	.70	.....	.....	.....	.....
†PL12A	Pawl Stud and Nut....	.88	.....	.....	.....	.....
PL13	Brake Pawl Spring	.06	.06	.06	.06	.06
PL14	Brake Pawl Spring Rod	.06	.06	.06	.06	.06

		For hoist, ton				
Nos.	Name of part	¾	1½	3	4½	6
PL15	Load Brake Cover	$0.30	$.....	$.....	$.....	$.....
PL16	Load Brake Cover Screw	.02	.....	.....	.....	.....
PL16A	Load Brake Cover Screw	....	.02	.02	.02	.02
PL17	Top Hook and Nut	....	3.95	4.95	8.80	11.75
PL18	Housing—1½ Ton	....	11.75	....	....	.....
PL20	Stripper	....	.95	.95	.95	.95
PL21A	Gear and Sprocket	....	8.80	8.80	8.80	8.80
‡PL21B	Gear and Sprocket	....	8.80	8.80	....	8.80
PL22	Pinion	....	7.05	7.05	7.05	7.05
PL24	Disc Hub Key	....	.10	.10	.10	.10
PL25	Load Chain, complete with PL26 and PL27 Standard Lift	7.25	12.90	24.65	36.40	48.00
	Additional Chain, per lineal foot	1.30	2.35	2.35	2.35	2.35
PL26	Chain Stop	.30	.65	.65	....	....
PL27	Offset Link and Pin ..	.47	1.05	1.05	....	....
PL28	Connecting Link	.30	....	....	....	....
PL29	Connecting Link	....	.53	.53	.60	.60
PL30	Bottom Swivel—Pair ..	1.20	1.20	....	....	....
PL31	Swivel Band	.65	1.10	....	....	....
PL32	Bottom Hook and Nut..	2.45	3.95	4.95	8.80	11.75
PL33	Housing Cover	....	5.15	5.15	....	....
PL34	Cover Cap Screw	....	.02	.02	....	....
PL35	Stripper Bolt and Nut..	....	.10	.10	.10	.10
PL36	Lockwasher	....	.01	.01	.01	.01
PL37	Disc Hub	....	3.50	3.50	3.50	3.50
PL38	Raybestos Disc	.50	.50	.50	.50	.50
PL39	Ratchet Disc	2.35	2.35	2.35	2.35	2.35
PL40	Ratchet	3.50	3.50	3.50	....	3.50
PL40C	Ratchet	3.50	3.50	3.50	3.50	3.50

		For hoist, ton				
Nos.	Name of part	¾	1½	3	4½	6
PL41	Handwheel	$2.35	$2.35	$ 2.35	$ 2.35	$ 2.35
PL42	Load Brake Pawl (Used with PL53)	....	.60	.60	....	.60
PL42A	Load Brake Pawl (Used with PL53A)	....	.60	.60	.60	.60
PL43	Pawl Holding Pin	....	.06	.06	....	.06
PL44	Hex Nut—Slotted	.35	.35	.35	.35	.35
PL45	Cotter Pin	.01	.01	.01	.01	.01
PL46	Ratchet Lever	5.30	5.30	5.30	5.30	5.30
PL46C	Ratchet Lever	5.30	5.30	5.30	5.30	5.30
PL47A	Ratchet Pawl and Rod.	.60	.60	.60	.60	.60
PL48	Lever Pawl Spring	.02	.02	.02	.02	.02
PL51	Lever Rod Pin	.02	.02	.02	.02	.02
PL52	Pawl Rod Lever	.75	.75	.75	.75	.75
PL53A	Load Brake Cover	....	.60	.60	.60	.60
PL54	Housing—3-Ton	....	....	11.75	....	....
PL55	Bottom Sprocket	....	....	7.05	....	....
PL56	Bottom Frame, per Pair	....	....	4.70	11.75	....
PL57	Bottom Frame Screw ..	....	....	.07	.07	....
PL58	Housing, per Pair	....	....	....	47.00	58.70
PL59	Housing Bolt and Nut, long	....	....	....	.18	.18
PL60	Housing Bolt and Nut, short	....	....	....	.18	.18
PL61	Sprocket—8-Teeth	....	....	....	9.40	9.40
PL62	Sprocket Shaft	....	....	....	3.25	3.25
PL63	Cotter Pin	....	....	....	.04	.04
PL64	Bottom Frame	....	....	....	....	14.10
PL65	Lockwasher	....	....	....	.01	.01
PL66	Needle Bearing—each..	....	1.30	1.30	1.30	1.30
PL67	Bearing (Hardened Steel)	....	1.06	1.06	1.06	1.06

Open stock.

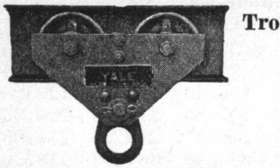
STEEL TROLLEYS

Provide for a trolley construction in two complete units, each side assembly consisting of side plate, wheels, axles and bearings.

The two halves are connected by an equalizing pin. This flexibility in design provides equalized load, facilitating operation on small radius curves, over track joint or other track irregularities.

The plane of the wheels is perpendicular to the flanges of the I-beam, so that the lines of force due to the load intersect at point of suspension and load is at all times equally distributed over the four wheels.

YALE MODEL "T", PLAIN



Timken Tapered Roller Bearing

Trolley Frame—Heavy rolled steel trolley side plates extend beyond chilled tread wheel flange, providing bumper. Outer steel side plates connected by steel bolts and separators with inner steel plates for supporting axles on both sides of wheels. Side plates reinforced by heavy separator castings, and two sides connected by equalizing pin.

Wheels—Large diameter, provide perfect rolling motion, with minimum of wear on wheels and track. Wheels with specially curved flanges, avoid grinding and cramping on curves.

Axles—Carbon steel, hardened and ground to tolerance of .0005 in. Axles rigidly attached to side plates, supported on both sides of wheel. Adjusting nut on inner end of axles for adjusting clearance on opposed Timken tapered roller bearings.

Bearings—Eight adjustable Timken tapered roller bearings—two on each wheel designed and made to take radial and thrust loads.

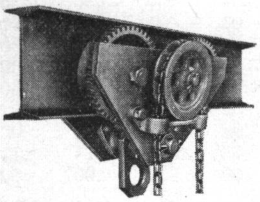
Lubrication—Alemite fittings, mounted in wheel hub. Complete lubrication at four points, one in each wheel, and readily accessible from the outside.

Suspension—Drop-forged steel clevis up to two-ton size—heavy steel plate on larger sizes, suspended from equalizing pin. All parts in suspension are steel.

Adjustability—Removable equalizing pin, which connects two trolley halves, enables trolley to be taken from track at any point, or widened for larger beams.

Cap., tons	Each	Adjustable for I-beam, in.	Greatest dist. bet. supports, ft.	Min. radius curve, in.	Diam. of tread of wheels, in.	Net wt. each, lbs.
¼	$ 52.00	4, 5, 6, 7	10	18	3	17
½	54.00	5, 6, 7, 8	14	21	3¾	27
1	70.00	6, 7, 8, 9	14	21	4¾	53
1½	98.00	7, 8, 9, 10	15	30	5½	71
2	110.00	8, 9, 10, 12	16	36	6½	105
3	140.00	9, 10, 12, 15	16	42	7¼	147
4	194.00	10, 12, 15, 18	16	48	8¼	202
5	230.00	12, 15, 18, 20	18	54	10	265
6	300.00	12, 15, 18, 20	16	60	10	311
8	470.00	15, 18, 20, 24	18	60	12	472
10	515.00	15, 18, 20, 24	15	60	13	587
12	675.00	15, 18, 20, 24	12	60	13	587

YALE MODEL "T", GEARED



Timken Tapered Roller Bearing

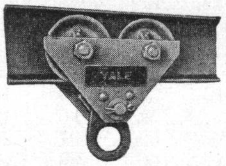
Similar in construction to the Model "T" plain trolley described above except that this geared type trolley has two geared trolley wheels which engage with the driving pinion. The driving pinion, operated by the chain wheel and hand chain, provides positive lateral motion for the trolley.

Cap., tons	Each	Reach of hand chain from under side of I-beam	Pull on hand chain to move load, in lbs.	Net wt. each, lbs.
1	$117.00	8 ft. 8 in.	7	78
1½	148.00	9 ft. 0 in.	7	103
2	175.00	9 ft. 11 in.	8	148
3	200.00	12 ft. 3 in.	11	194
4	265.00	12 ft. 6 in.	14	255
5	305.00	15 ft. 3 in.	17	329
6	385.00	15 ft. 5 in.	20	378
8	610.00	16 ft. 2 in.	25	514
10	650.00	16 ft. 9 in.	32	645
12	790.00	16 ft. 9 in.	38	645

Note—Other specifications same as for Model T Plain.

All above, open stock.

YALE MODEL "H", PLAIN



Roller Bearing

Trolley Frame—Heavy rolled steel trolley side plates which extend beyond wheel flange, providing a trolley bumper. Side plates reinforced by heavy separator castings, and the two sides connected by equalizing pin.

Axles—Carbon steel, hardened and ground to tolerance of .0005 in. Axle rigidly supported in side plate.

Bearings—Hyatt roller bearings, for radial loads.

Lubrication—Alemite fitting, mounted in wheel-hub. Complete lubrication at four points, one in each wheel, and readily accessible.

Suspension—Drop-forged steel clevis up to the two-ton size. Heavy steel plate on larger sizes, suspended from equalizing pin. All parts in suspension are steel.

Wheels—Large diameter wheels, provide a perfect rolling motion, with a minimum of wear on wheels and track. Wheels with specially curved flanges, avoid grinding and cramping on curves.

Test and Inspection—All parts fully tested and inspected as regards heat treatment, grade of finish, chemical and physical analysis of material, performance and fit in the unit, and checked with limit gauges for size and accuracy.

Cap., tons	Each	Adjustable for I-beams, in.	Max. dis. betw'n supports, ft.	Min. curve radius, in.	Diam. tread of wheels, in.	Net wt. each, lbs.
¼	$ 38.00	4, 5, 6, 7	10	18	3	17
½	40.00	5, 6, 7, 8	14	21	3¾	27
1	52.00	6, 7, 8, 9	14	21	4¾	43
1½	81.00	7, 8, 9, 10	15	30	5½	72
2	90.00	8, 9, 10, 12	16	36	6½	93
3	115.00	9, 10, 12, 15	16	42	7¼	145
4	150.00	10, 12, 15, 18	16	48	8¼	160
5	200.00	12, 15, 18, 20	18	54	10	268

YALE "WHIZ," PLAIN

YALE
WHIZ
2-TON

Roller Bearing

Trolley Frame—Trolley sides are heavy drop-forged steel extending beyond wheel flange, providing bumper protection for wheels. Ribbed inside for stiffness and strength.

Wheels—Large diameter, pressed steel hardened and carburized, provide a perfect rolling motion, with minimum of wear on wheels and track. Extra large flanges for easy rolling.

Adjustability—Removable equalizing pin, which connects the two trolley halves, enabling trolley to be taken from track at any point, or widened for larger beams.

Bearings—Large diameter ball bearings mounted inside wheels for radial and thrust loads, providing easy operation on I-beam track.

Lubrication—Alemite fitting on each wheel.

Axles—Carbon steel.

Suspension—Drop-forged steel clevis.

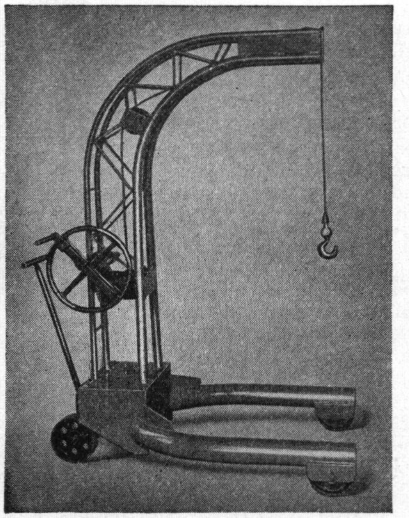
Cap., tons	Each	Adjustable for I-beam, in.	Min. size in.	I-beam, lbs.	*Max. size I-beam, in.	Net wt. each, lbs.
½	$23.00	4, 5, 6, 7, 8	4	7.7	10	15
1	27.00	4, 5, 6, 7, 8, 9	4	7.7	12	21
2	50.00	6, 7, 8, 9, 10	6	12.5	24	43

*Trolleys requiring greater than standard adjustment to fit larger I-beams furnished at extra cost—prices on request.

All above, open stock.

PORTABLE FLOOR CRANES

CANTON



A 4-In-One-Tool

A crane, a hoist, a shop truck, and a portable ladder. Can be used by one man—quickly, safely and economically. Gets to those out of the way places where overhead conveying systems cannot reach.

Constructed of welded steel with high tensile drop forgings for the axle, fork and hook.

The operating mechanism is a self-locking worm which automatically holds the load at any point without the use of a ratchet and pawl.

A unique eccentric axle locks the front wheels when the pulling handle is upright, assuring positive safety to the operator and the material being handled. Moving the handle to the pulling position releases the locked wheels, permitting easy conveyance.

Two Speeds

Fast single cable operation for light loads, slower double cable operation for heavier loads (except on Nos. 1 and 2).

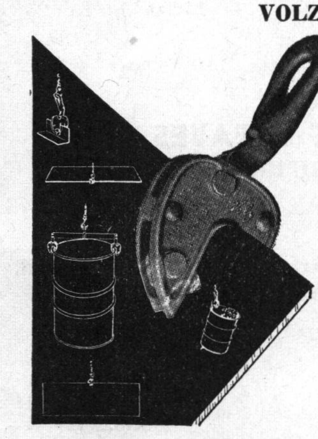
Nos.	Each	Cap., tons	Total height, ft.	Lift floor to hook, in.	Over hang, in.	Width bed, in. Outs.	Width bed, in. Ins.	Lgth. bed, in.	Net wt. each, lbs.
1	$240.00	1	5½	4½	27	31	22	49	500
2	270.00	1½	6⅓	5⅓	30	34	25	52	550
3	300.00	2	7⅓	6	33	37	28	55	600
4	330.00	2½	8⅓	7	36	41	32	58	625
5	375.00	3	9⅓	8	39	47	36	64	750
6	425.00	3	10⅓	9	42	51	40	67	825
7	480.00	3	11⅓	10	45	55	44	70	900
8	540.00	3	12⅓	11	48	60	49½	73	1000

Height of bed, Nos. 1 to 4 in. inclusive, 9¼ in.; Nos. 5 to 8 in. inclusive, 9¾ in.

Open stock.

LIFTING CLAMPS

VOLZ POSITIVE



Drop Forged Steel

For raising, lowering and conveying any flat surfaced metal in raw, finished or fabricated condition, or anything that has sufficient flat surface for the jaws to get a solid grip upon. Will handle sheets, plates, drums, containers, angles, structural assemblies, etc.

Operates on both the wedge and pressure principle. Its gripping power increases according to the weight lifted. Has a safety factor of 5 to 1. You cannot lift a greater load than it is rated to lift, as the throat in which the jaws actuate is fixed to the maximum safety capacity for each size clamp.

Instantly releases the load when the pull is definitely released. Cannot be jarred or bumped loose when under load.

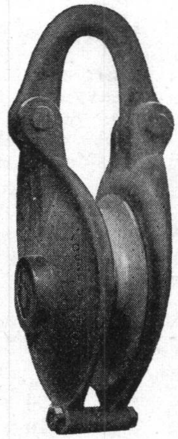
Capacity, tons	½	1	3	6
Takes plates, in.	0–⅝	0–¾	0–1	0–1½, ½–2
Wt. each, lbs.	4	9	20	50
Each	$25.00	35.00	58.00	160.00

Open stock.

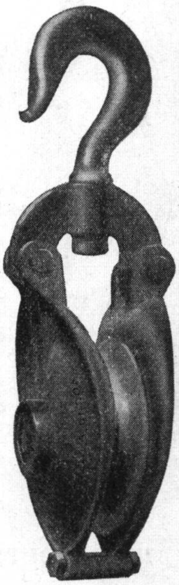
SLUSHER DRAGLINE BLOCKS

STEEL, FOR WIRE ROPE

Swivel Shackle



Plain Shackle



Swivel Hook

Timken Bearing Equipped

Dust-sealed roller bearings. Designed for long hard wear. Both sheaves and sides are of manganese steel. The wide sheaves and flared sides provide ample throat clearance for passing square knot rope splicing.

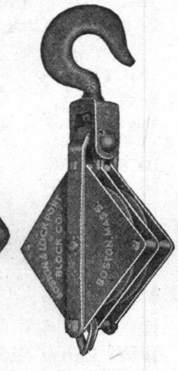
When specified, toggle draw pins instead of cotter pins can be supplied at a small added cost.

Nos.	With Plain Shackle, each	With Swivel Shackle, each	With Swivel Hook, each	Size sheave, in.	For rope, in.	Wt. each plain shackle, lbs.
866	$42.00	$48.50	$45.00	6x1¾	½	26
868	50.00	59.00	55.00	8x2⅜	⅝	38
8700	60.00	73.00	68.00	10x2½	⅝	54
872	80.00	97.00	90.00	12x2⅛	¾	70

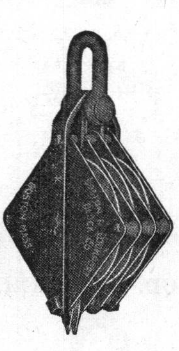
TACKLE BLOCKS

REGULAR DIAMOND PATTERN, STEEL, FOR WIRE ROPE

No. 2460-B Single with Loose Hook



No. 2459-B Double with Swivel Hook



No. 2464-B Triple with Shackle

Graphite Bronze Bushed, Self Lubricating

Iron sheaves, alloy steel sheave pins.

Hooks are drop forged, flatted. Shackles are steel.

Beckets furnished on all single, one-half double, and one-third triple blocks without extra charge.

	Single	Double	Triple
With Loose Hook, Nos.	**2460-B**	**2461-B**	**2461-TB**
With Swivel Hook, Nos.	**2458-B**	**2459-B**	**2459-TB**
With Shackles, Nos.	**2462-B**	**2463-B**	**2464-B**

Sheave, in. Diam.	Sheave, in. Thick.	Sheave, in. Pin	Rope, in.	Single each	Double each	Triple each	Wt. each, lbs. Sgle.	Wt. each, lbs. Dbl.	Wt. each, lbs. Tple.
6 x	1 x	¾	⅜	$12.00	$21.00	$30.00	15	20	30
8 x	1¼ x	⅞	½	16.00	25.00	34.00	22	38	50
10 x	1¼ x	⅞	⅝	21.00	33.00	45.00	33	46	70
12 x	1½ x	1	⅝	30.00	47.00	64.00	58	82	120
14 x	1½ x	1⅛	¾	40.00	61.00	82.00	80	130	180

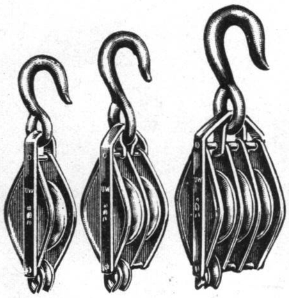
All above, open stock.

WIRE ROPE AND MANILA ROPE BLOCKS

Wire Rope Blocks are designated by **sheave** diameter.
Manila Rope Blocks are designated by **shell** size.

TACKLE BLOCKS

LIGHT DUTY, STEEL, FOR MANILA ROPE


Single Double Triple

With Loose Side Hooks, Iron Bushed

Strong, sturdy and dependable. Heavy steel side plates and U-brackets. Strong oversized forged steel hooks and thimbles. Rounded edges on side plates protect rope.

Beckets furnished on all single, one-half double and one-third triple blocks without extra charge.

Furnished in lustre green enamel.

Lgth. shell, in.	For rope, in.	Single			Double			Triple		
		Nos.	Each	Wt. each, lbs.	Nos.	Each	Wt. each, lbs.	Nos.	Each	Wt. each, lbs.
4	½	800	$1.70	1¼	805	$2.90	1⅞	810	$ 4.20	2⅞
6	¾	801	2.40	3⅛	806	4.10	5 1/16	811	6.00	6¾
8	1	802	4.20	8	807	7.10	12	812	11.10	16

Open stock.

HEAVY DUTY, STAR MALLEABLE IRON, FOR MANILA ROPE

No. 2325A

No. 2326A

No. 2327A

With Loose Side Hooks; Iron Sheaves; Graphite Bronze Bushed; Self-Lubricating

Malleable iron shells, carefully rounded to prevent chafing of rope, and construction to prevent rope from jamming between the shell and the sheave. The sides are recessed covering the ends of the center (sheave) pin.

All straps extend to the bottom of the shell, furnishing proper support.

Alloy steel sheave pins.

Japanned finish.

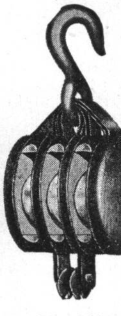
Lgth. shell, in.	For diam. rope, in.	Size of sheaves, in.	No. 2325A—Single		No. 2326A—Double		No. 2327A—Triple	
			Each	Wt., lbs.	Each	Wt., lbs.	Each	Wt., lbs.
4	½	2¼x ⅝x⅜	$4.30	2⅛	$ 7.00	3½	$ 9.70	4¾
6	¾	3½x1 x½	6.00	5¾	10.00	9¾	14.00	13¼
8	1	4¾x1⅛x⅝	9.00	10⅝	15.50	18¾	22.00	24¾

Open stock.

WOOD, FOR MANILA ROPE

No. 2207

No. 2208


No. 2209

With Loose Side Hooks; Iron Sheaves; Iron Bushed

Regular mortise wood shells, inside iron strapped iron sheaves.

Beckets furnished on all single, one-half double and one-third triple blocks without extra charge.

Iron Bushed

Lgth. shell, in.	For diam. rope, in.	Size of sheaves, in.	No. 2207—Single		No. 2208—Double		No. 2209—Triple	
			Each	Wt., lbs.	Each	Wt., lbs.	Each	Wt., lbs.
4	½	2¼x ⅝x⅜	$1.70	1¾	$2.60	2½	$3.50	3⅜
6	¾	3½x1 x½	2.50	4¼	4.00	6½	5.50	9
8	1	4¾x1⅛x⅝	4.20	8⅞	6.40	14¼	8.60	20¼

Open stock.

SNATCH BLOCKS

STEEL PLATE, FOR WIRE ROPE

No. 2525

Iron Sheaves; Graphite Bronze Bushed, Self-Lubricating

Steel shells have impressions on each side preventing the rope from jamming between the shell and the sheave.

Drop forged steel head, links, rockers and swivel hook. Alloy steel sheave pins.

Japanned finish.

No. 2525—Safety Locking

Rope guard attached to head prevents rope from leaving the score of the sheave.

BOSTON & LOCKPORT BLOCK CO.
BOSTON, MASS.
No. 2526

No. 2526—Drop Link

Size sheave, in.	For rope, in.	No. 2525		No. 2526	
		Each	Wt. each, lbs.	Each	Wt. each, lbs.
6x1 x ¾	⅜–½	$14.00	15	$11.00	12½
8x1¼x ⅞	½–⅝	20.00	32	16.00	23½
10x1¼x1	⅝	28.00	52	24.00	41
12x1½x1⅛	¾	40.00	76	36.00	65
14x1½x1¼	¾–⅞	52.00	104	48.00	94

Open stock.

STEEL, FOR MANILA ROPE

BOSTON & LOCKPORT BLOCK CO.
BOSTON, MASS.

Drop Link; Iron Sheaves; Iron Bushed

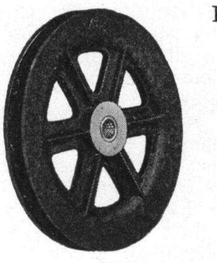
Steel shell with nicely rounded edges. Double side straps extend to bottom of shell. Drop forged steel head, links and flatted swivel hook. Japanned finish.

Lgth. shell, in.	For rope, in.	Size of sheaves, in.	No. 2351	
			Each	Wt. each, lbs.
6	⅞	3 x1⅛x½	$ 6.50	6
8	1	4½x1⅜x⅝	9.00	13
10	1¼	5¾x1⅞x¾	15.00	23

Open stock.

TACKLE BLOCK SHEAVES

IRON, FOR WIRE ROPE



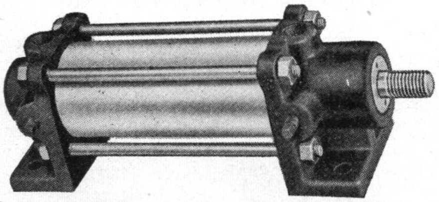
Regular Pattern; Graphite Bronze Bushed, Self-Lubricating

Japanned finish.

Outside diam., in.	Thickness at rim, in.	Diam. pin, in.	Thickness through hub, in.	For rope, in.	No. 2592	
					Each	Wt. each, lbs.
6	1	⅝	1 1/16	⅜–½	$ 3.20	3¼
8	1¼	⅞	1⅜	½–⅝	5.40	8¼
10	1¼	1	1⅜	⅝	7.20	10
10	1½	1	1⅝	¾	8.00	11¼
12	1½	1⅛	1⅝	⅝–¾	9.60	18½
14	1½	1⅛	1⅝	¾–⅞	13.00	25

Open stock.

AIR OR HYDRAULIC CYLINDERS



For Every Purpose

For pulling, pushing and clamping operations—to speed up other operations or processes, to eliminate manual effort, make machines more productive.

These cylinders may be depended upon for smooth, positive application of air or fluid power.

They are built in a range of models and sizes, in three different types, to fulfill every possible need for air or fluid power efficiently and economically. Standardized construction and interchangeable units permit the cushioning of either or both ends with either adjustable or self-regulating cushioned beads.

All models are available in single and double-acting types and with any length of stroke desired. All types are available in six standard mountings which meet practically all application requirements. Special mountings can be furnished.

Capacities

Figures given are theoretical without allowance for friction or leakage. Actual capacities should be figured at 80% of theoretical values shown.

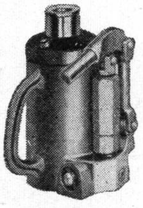
Cylinder diam., in.	Piston area rod end, sq. in.	Pulling cap. in lbs. at 80 lbs. press.	Cylinder diam., in.	Piston area rod end, sq. in.	Pulling cap. in lbs. at 80 lbs. press.
1½	1.46	117	6	27.05	2160
2	2.83	226	8	49.04	3920
2½	4.47	358	10	76.77	6140
3	6.63	530	12	110.69	8850
4	11.78	942	14	148.00	11840
4½	15.12	1210			

Complete Specifications and Prices on Request

HYDRAULIC PULLERS

SIMPLEX-JENNY

Center-Hole



Model 303A 30 Tons

Maintenance, repair and production jobs accomplished in minutes instead of hours. Pulls, pushes, or lifts, and can easily be rigged up as a portable press. Operates vertically or horizontally without side thrust or friction and without the need for heavy auxiliary equipment. Self-contained and light in weight for its capacity. The Simplex-Jenny is its own back up and is self-supporting because of its center-hole construction. The ram is self-retracting, when release valve is opened.

Alloy steel pull rods are recommended as Simplex-Jennies will stretch or part any mild steel rod that will fit through the center hole.

Nos. 303A and 306A—30 ton— single pump—is used to pull cylinder liners, to form ship and boiler plates and to straighten out bulges in plates. It pulls bulkheads together, as well as structural members or double bottoms for welding or riveting; eliminates the use of impact wrenches and air hose. Also pulls bolts, rock bits, etc.

No. 606A—60 tons—with its double pumps is designed for longer and heavier pulls. It has performed "impossible" tasks in shipbuilding, mines, railroad shops, oilfields, construction and general industry. It is also used for pulling in utility service pipe.

No. 803A—80 ton and 1003A—100 ton have single pumps. They are used to pull bushings, cutless bearings, cylinder liners, pistons, wrist pins, valve seats, keys, wheels, sprockets, gears, boiler tubes, pipes, etc.

No. 10010A—100 ton—double pumps. Specially designed for such heavy duty jobs as pulling heavy bushings, pulling valve seats or pistons from largest sump or slush pumps. Equipped with direct reading pressure gauge as standard equipment.

Nos.	Each	Cap., tons	Diam. center hole, in.	Height, in.	Travel, in.	OD, in.	Cap. oil, pts.	Wt. each, lbs.
303A	$184.50	30	1⅛	9¼	3¼	4¼	1¼	32
306A	214.50	30	1⅛	12	6	4½	2	46
606A	400.00	60	2⅛	13¾	6	6½	4	92
803A	310.00	80	3⅛	10	3¼	7¼	2	74
1003A	310.00	100	2⅛	10	3¼	7¼	3	72
10010A	730.00	100	2¾	19½	10	8	10	220

Open stock.

HYDRAULIC JACKS

SIMPLEX INDUSTRIAL

Tested to 50% Over Rated Capacity

These Hydraulic Jacks combine hydraulic power for ease of operation with engineered safety and versatility—the result is lifting power suitable for general applications as well as specialized jobs. All models are tested to lift 50% over rated capacities. Jacks may be operated in either vertical or horizontal position with same high efficiency and safety.

Single Pump Models

The single, long stroke pump is positioned for maximum lift with minimum effort. Oil to and from pump and from reservoir is controlled by quick operating, non-sticking, spring tensioned ball valves.

Complete with operating lever of ½ in. pipe, 20 in. long, which can be locked in socket for placing and removing jack.

Nos.	Each	Cap., tons	Low height, in.	Hyd. lift, in.	Ext. screw, in.	Total height, in.	Net wt. each, lbs.
3HJ	$25.10	3	9	6 9/16	2	17 9/16	15
5HJ	28.40	5	9	6½	3	18½	18
8HJ	32.00	8	9	6⅜	4⅜	19¾	21½
12HJ	44.40	2	9	6 1/16	3	18 1/16	29½
20HJ	73.90	20	10	6 7/16	...	16 7/16	32½

Double Pump Models

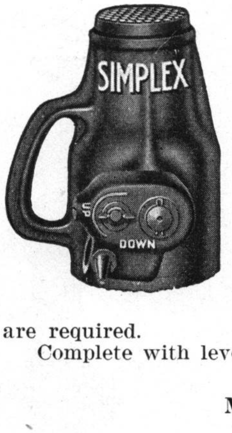
Each of these heavy duty Hydraulic Jacks is equipped with both high and low speed pumps which may be operated singly or in unison. They are suitable for mill and factory work; for construction mining, drilling, journal inspection, bridge work, culvert pushing or pipe bending.

Complete with 13/16 in. solid steel operating lever, 20 in. long.

Nos.	Each	Cap., tons	Low height, in.	Hyd. lift, in.	Total height, in.	Net wt. each, lbs.
30HJ	$139.30	30	11	7	18	65
50HJ	213.00	50	12	7	19	115
100HJ	464.80	100	12	6½	18½	203

JOURNAL JACKS

SIMPLEX STANDARD SPEED



Low Height, High Capacity and Efficiency

These powerful, light, maintenance-free jacks are the result of modern design, with heat-treated alloy steel forgings, special bronze nuts, ball bearings and greater gear ratios. The ratchet mechanisms, with exception of the 1510A, are fully enclosed and are dust and dirt-proof.

An average man with a 5010 Simplex can lift more than 690 times his weight.

For inspecting and renewing railway journal brasses, bridge builders, tank and structural steel builders, and all other industries where powerful jacks of low height are required.

Complete with lever.

Malleable Iron Housing

Nos.	Each	Cap., tons	Height, in.	Lift, in.	Diam. base, in.	Lever in.	Wt. each, lbs.
1510A	$ 90.44	5	10	5	5¼	⅞x30	31
2510	124.74	25	10	5	5½	1 x36	35
3510	174.62	35	10	5	5½	1 x36	41
5010	302.50	50	10	4	7¼	1⅛x56	65

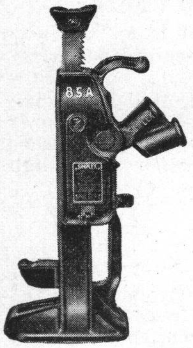
Aluminum Housing

A2510	$140.34	25	10	5	5½	1x36	31
A3510	196.46	35	10	5	5½	1x36	32

All above, open stock.

INDUSTRIAL JACKS

SIMPLEX SINGLE ACTING MINE TRACK JACK



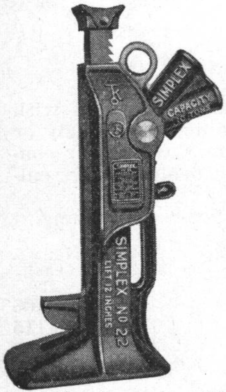
Ratchet Lowering

Ideal for moving machinery, re-railing mine locomotives, mine track work and for lifting or skidding mechanical mining equipment. No. 84A is recommended for thin coal seam work; No. 86A for thick seams; No. 85A for average conditions.

Cap and toe lift; nonrotating cap; safety speed trigger; double lever sockets. Minimum toe lifting height 1⅝ in.

5 Ton Capacity

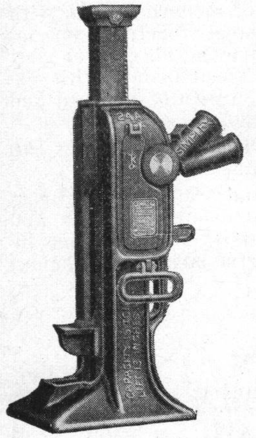
Nos.	84A	85A	86A
Height, in.	14	17	20
Lift, in.	7	10	13
Lever, in.	30	30	36
Base, in.	5x7⅜	5x7⅜	5x7⅜
Wt. each, lbs.	28	30	35
Each	$45.22	48.58	54.44



Ratchet Lowering

Used extensively with oil and other drilling equipment, and for railroad draft gear, bolsters and coupler repairs. Its speed and lifting range make it the most popular allaround jack for maintenance service in all types of industry — wherever heavy machinery and equipment requires moving.

	Each
No. 22—Capacity 10 tons, 21¼ in. high, 12½ in. lift, 2⅛ in. toe lift, 6½x10 in. base, 60 in. steel lever bar; wt. each 58 lbs.	$71.20



Ratchet Lowering

These jacks are exceptionally efficient for heavy duty jacking. All models lift full capacity on cap or toe. No. 24A is the "huskiest" ratchet lowering jack; No. 29 is recommended for faster and higher lifting. No. 2029 lifts 27% easier than No. 29. All models have a minimum toe lift of 2½ in., plus portability and balance for fast, safe jacking.

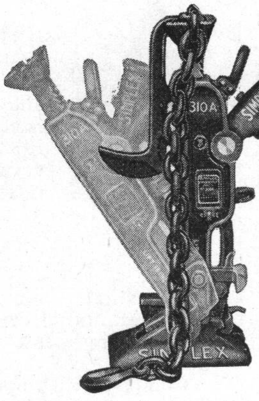
Furnished with oval or round sockets and 6 ft. oval or round hickory pole; or 1¼ in. round double socket with steel lever bar, or square socket for your lining bar.

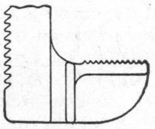
Nos.	24A	29	2029
Capacity, tons	15	15	20
Height, in.	23¼	28¼	28¼
Lift, in.	13	19	18
Base, in.	8x10¼	8⅛x11¼	8x11
Wt. each, lbs.	90	96	104
Each	$107.18	110.54	123.94

All above, open stock.

INDUSTRIAL JACKS

SIMPLEX EMERGENCY





Machine Corrugated Toe Lift.

This safety feature prevents loads from slipping off. Especially helpful in toe lift jacking at an angle.

Ratchet Lowering

For lifting, lowering, pushing and pulling.

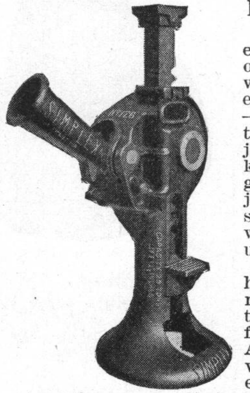
The standard jack in the oil fields and the choice in many industries.

It lifts vertically and lifts or pushes at any angle. Objects can be lifted or pushed on the rotating cap of the jack, on the corrugated toe lift, on the auxiliary cap shoe (two positions) or from any intermediate height by using the chain as a sling. Any link of the chain can be engaged in the recessed cap. Loads can be raised or lowered the full limit of the rack bar when the jack is operated at an angle. Double lever socket provides for close quarter operation.

Complete with 5 ft. chain, auxiliary cap shoe and lever.

	Each
No. 310A—Capacity 15 tons, 22¼ in. high, 13½ in. lift, 2¼ in. toe lift; wt. each complete 109 lbs.	$144.68

SIMPLEX GEARED



Ratchet Lowering

The powerful geared type mechanism of these jacks provides both speed and ease in heavy lifting —considerably faster than standard speed jacks. The integrally keyed pinions and gears used in these jacks have been in service since 1914 without a single failure.

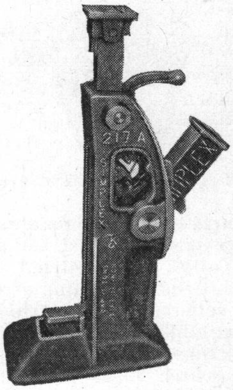
Nos. 126 and 127 have large (3x3¾ in.) right and left hand toe lifts, respectively, for operation in pairs. All models furnished with oval lever sockets and oval hickory poles—the strongest type of pole because it cannot be inserted across the grain.

Nos.	125	126	127	135
Cap., tons	25	25	25	35
Height, in.	26½	27½	27½	27
Lift, in.	15½	12½	12½	16
Toe lift, in.	...	3 RH	3 LH	...
Wt. ea., lbs.	168	192	192	228
Each	$318.22	351.70	351.70	385.20

All above, open stock.

TRACK OR TRIP JACKS

SIMPLEX SINGLE ACTING



Designed and constructed to assure maximum strength and safety for faster, easier track lifting. Every jack tested for full capacity on the toe. An improved rustproof tension spring is located directly in back of both lifting and retaining pawls to provide safe operation at any angle. These jacks are tripped by engaging the lifting pawl in the retaining pawl and completing down stroke of lever.

Nos. 15A, 215A, Nos. 216A and 217A are identical with interchangeable parts except for housings and rack bars. No. 15A is for surfacing, lining (up to 2 in.), tie plate renewal, use in conjunction with welded rail, and with Tamping and Ballasting machines. It sits much more firmly and stands straighter under tie or rail (without damage), due to the 2½x3¼ in. forged and machined toe lift.

Furnished with square lever sockets and without lining bars. Oval or round sockets with oval or round hickory poles available at extra charge.

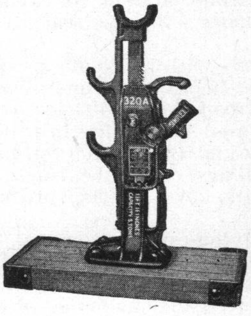
15 Ton Capacity

Nos.	15A	215A	216A
Height, in.	11	10½	17½
Lift, in.	5	5	8
Toe lift, in.	2	2⅛	2⅛
Wt. each, lbs.	41	40	54
Each	$55.26	55.26	56.94

Nos.	217A	218
Height, in.	22¾	29
Lift, in.	13	19¼
Toe lift, in.	2⅛	2⅛
Wt. each, lbs.	60	76
Each	$61.96	77.04

REEL JACKS

SIMPLEX SINGLE ACTING



Ratchet Lowering

For safe handling of all reel sizes from 20 to 60 in. diameter.

Equipped with 3 lifting hooks, 9½, 15½ and 21 in. respectively from ground level. The top hook is for 2½ in. spindles and the other two for 2 in. spindles.

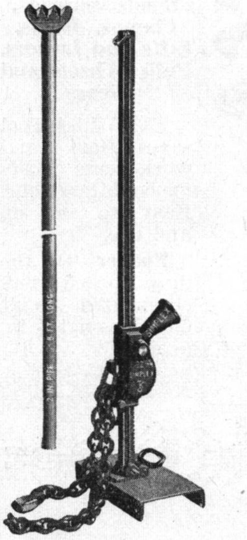
Laminated oil-treated oak base.

	Each
No. 320A—Capacity 5 tons, 21 in. high, 10 in. lift, 30 in. lever; wt. each 48 lbs.	$83.74

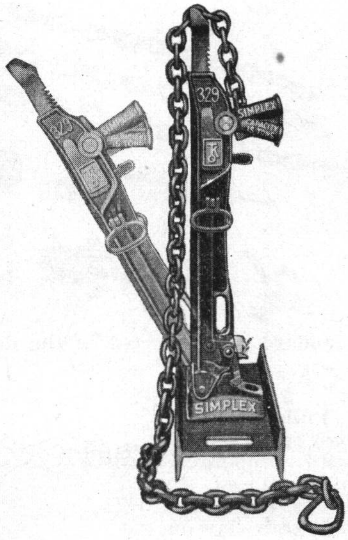
All above, open stock.

POLE JACKS

SIMPLEX SINGLE ACTING



No. 325



No. 329

Ratchet Lowering

For telephone and telegraph, light and power railroad and street railway companies to pull or straighten poles. Rugged construction and high efficiency of these jacks save valuable man-hours and reduce "out-of-service" time in maintenance of pole lines. Only one or two men are needed to pull, straighten or move poles, with no service interruption and without digging, regardless of pole size or depth in the ground.

No. 325 Junior pole jack pulls or straightens poles up to 30 feet in height. It has a capacity of 5 tons and will pivot on the steel channel base to any angle. Also serves as a guy line tightener or for pulling underground cables. Furnished with an 8 foot pike pole which is useful for straightening poles located beside ditches. Recommended for rural maintenance and repair.

No. 329 is the standard pole jack of the Bell System. It has 15 tons capacity and will pull or straighten any size pole, large or small. The "I" beam base provides a firm foundation and the jack will pivot on its base when the base pawl is disengaged.

Standard Equipment

No. 325 is equipped with 5 ft. steel pinch lever bar, tapered and heat treated; 5 ft. steel chain, an 8x15 steel channel base; and 8 ft. pike pole of seamless tubing. Pole has malleable iron forked cap for biting into wood on pole straightening jobs.

No. 329 is furnished complete with 8 ft. scarf welded BBB steel chain with pear-shaped link. "I" base 10x24 in. with hand hole; and 5 ft. steel lever bar, tapered and heat treated. Alloy steel chain available at extra charge.

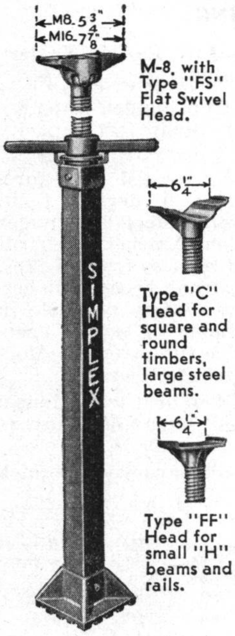
No. A329 is the same as No. 329 except that it has an aluminum housing which provides lightness for easier portability without sacrifice of strength.

Nos.	Each	Capacity, tons	Height, in.	Lift, in.	Wt. jack only, lbs.	Wt. each complete, lbs.
325	$124.42	5	50	36	34	98
329	184.24	15	37¾	22	95	193
A329	192.22	15	37¾	22	60	158

Open stock.

MINE ROOF JACKS

SIMPLEX



M-8, with Type "FS" Flat Swivel Head.

Type "C" Head for square and round timbers, large steel beams.

Type "FF" Head for small "H" beams and rails.

No. M 8—Light Duty

No. M16—Heavy Duty

Easily and quickly set in place where tender draw slate or other soft taps present hazards. Allow loading machines and conveyors to work in less space; insure better protection at the working face.

Used as temporary supports under cross timbers, steel beams or steel rails, and for holding conveyors in place.

Three types of heads as illustrated, "FS," "C" and "FF."

Two types of handles; lever nut as shown in illustration, or side handle.

Painted aluminum color for improved visibility.

No. M-8—Capacity 8 tons, 1½ in. diam. heat treated screws, 2 in. square tubing.

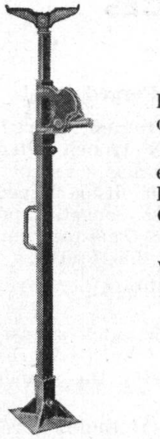
No. M-16—Capacity 16 tons, 1⅞ in. diam. heat treated screws, 2½ in. square tubing.

Min. height closed, in.	Max. height open, in.	No. M8 Each	No. M8 Wt. each, lbs.	No. M16 Each	No. M16 Wt. each, lbs.
30	45	$17.64	28	$26.06	48
36	51	17.94	30	26.36	50
42	57	18.40	32	26.84	52
48	63	18.72	34	27.12	54
54	69	19.02	36	27.44	56
60	75	19.50	38	27.76	58
66	81	19.96	40	28.24	60
72	87	20.30	42	28.70	62

Note—In ordering specify type head and type handle wanted.

MINE TIMBER JACKS

SIMPLEX DOUBLE ACTING



Ratchet Lowering

Has a double acting mechanism which lifts or lowers on both the up and down stroke. The fastest operating of all timber jacks.

The mechanism operates directly on the tubing, eliminating rack bar weight. Easily and safely lifts heavy timbers, structural beams or rail sections. Convenient carrying handle.

Aluminum alloy housing and base reduce weight.

Available with three types of head:

"E"—Flat, 8⅛ in. wide.

"F"—As illustrated, 10¼ in. wide.

"D"—Fork or V-shaped, 8⅞ in. wide.

No. A9225

Min. height, in.	Each	Max. height, in.	Lift, in.	Wt. each, lbs.
39	$85.82	59	20	29
45	85.82	71	26	31
57	85.82	95	38	36
69	85.82	107	38	39

Note—In ordering specify type head wanted.

All above, open stock.

JACK SCREWS

SIMPLEX BALL BEARING

TKO
SIMPLEX
CHICAGO

Four-Way Head Type—Lift Easier, Faster and Safer

Will not twist out from under capacity loads. Guaranteed to lift their full capacity safely and continuously.

Non-slip corrugated heat-treated drop forged cap with self-leveling 9 degree float. Chrome-molybdenum pivoted steel ball, under cap, is nested in a hardened nickel steel ball seat, centers the load and reduces friction 88%. Base of tough malleable iron; broad bell bottom; handle cast integral. Safety peephole in base prevents over extension of screw. Peephole is reinforced to insure full strength. Modified acme threaded forged steel screw.

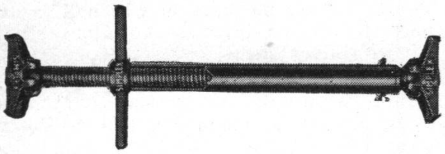
Chisel-pointed, high carbon heat-treated steel bars are 40% stronger and have added use as pry bars, etc.

Jacks are painted a different color for each capacity for quick identification.

	Jack		Lever Bar				
Size, in.	Each	Wt. each, lbs.	Each	Wt. each, lbs.	Capacity, tons	Ht. closed, in.	Rise of screw, in.
1¼x 4	$ 7.20	7	$1.80	2	10	8	2
1¼x 6	7.52	9	1.80	2	10	9¾	4
1¼x 8	8.30	11	1.80	2	10	12	6
1¼x10	9.30	15	1.80	2	10	14	8
1½x 6	9.14	10	2.40	3	12	10¼	3¾
1½x 8	10.46	12	2.40	3	12	12¼	5¾
1½x10	11.60	14	2.40	3	12	14¼	7¾
1½x12	12.88	16	2.40	3	12	16¼	9¾
1¾x 8	12.26	15	3.00	5	16	12¼	5¼
1¾x10	14.06	18	3.00	5	16	14¼	7¼
1¾x12	15.34	20	3.00	5	16	16¼	9¼
2 x 6	12.88	15	4.80	6	20	10½	3
2 x 8	14.72	17	4.80	6	20	12¼	5
2 x10	16.50	20	4.80	6	20	14¼	7
2 x12	18.44	23	4.80	6	20	16¼	9
2 x14	20.28	26	4.80	6	20	18¼	11
2½x 8	21.40	30	7.20	11	24	13	4¼
2½x12	26.30	37	7.20	11	24	17	8¼
2¼x14	29.40	40	7.20	11	24	19	10¼
2½x16	32.68	48	7.20	11	24	21	12¼
2⅛x18	35.62	52	7.20	11	24	23	14¼

TRENCH AND SEWER BRACES

SIMPLEX



Drop Forged Steel

Drop forged steel. The only trench and timber brace constructed with drop-forged balls and sockets and lever nut. They are unbreakable, stronger and more durable than malleable braces.

The screw is accurately machine cut. The blunt safety lever nut prevents injuries.

The ball and socket joint at both ends permits quick adjustment to any angle. Lugs on the face of the shoes firmly grip the planking. Adaptable to any width of trench by using the proper length of pipe.

They protect pipe-laying crews against cave-ins; eliminate redigging.

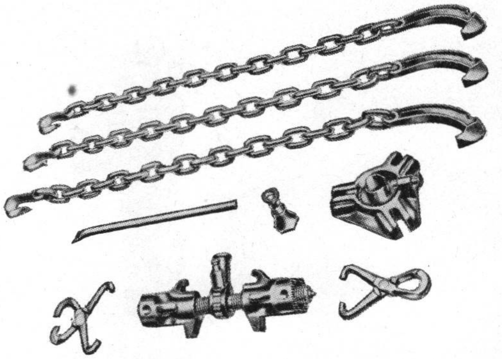
Without Pipe

Nos.	Per dozen	Diam. screw, in.	Length screw, in.	Safe extension of screw, in.	Wt. dozen, lbs.
16	$ 98.02	1½	12	7	164
17	102.94	1½	14	9	173
18	107.82	1½	16	10	182
20	220.52	2	18	10	385

All above, open stock.

UTIL-A-TOOL SETS

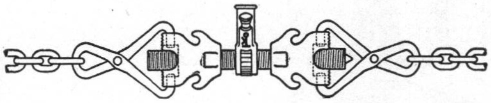
SIMPLEX

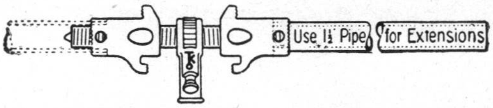


Pushes, Pulls, Bends, Spreads, Clamps, Holds, Lifts and Lowers, Pulls Wheels and Gears

The Util-A-Tool saves time and work—cuts costs on countless jobs. Easy to set up and use.

Pusher—On the drop forged steel corrugated nut ends or on 1½ in. standard pipe inserted in the deep wells of the nuts.





Pulls—Using two of the chains with drop-forged alloy steel sky hooks. Each chain has grab claw on one end, grab hook on other end.

Spreads — On corrugated spreading lugs. No. 3A spreader jack also serves for close-quarter work as it is 3 in. closed, extends 1 in., and can be extended any length by inserting 1 in. pipe in base or ½ in. pipe on cap.

Clamps and Holds Parts—For welding or assembly on the corrugated clamping lugs; serves as handy beam clamp for chain hoists with use of sky hooks. Nuts are reversible; straightens structural or pressed steel members; holds down portable machines.

Lifts and Lowers—When 3-way drop forged base is snapped on. Machines construction equipment, beams and other heavy objects can be raised, lowered or supported.

Universal Wheel Puller—Pulls all sizes of spoked or solid center wheels and gears by attaching the 3-way chain base, centering the live center in the shaft after removing the nut at that end and connecting the three chains with the base and object to be pulled. Also pulls pinions and bushings.

Complete Set Includes

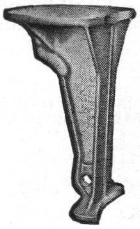
3 chains, ½x40 in.; with forged grab-hooks and claws
Forged chisel pointed lever bar, ¾x18 in.
3-way base and wheel puller
2 sky hooks
No. 3A spreader jack, min. height 3 in., spreads 1 in.
1 push and pull jack; 10 ton capacity
Heavy duty tool box, 18x8x8 in.

Per set

No. 612—Length screw 12 in., screw travel 11 in.; wt. jack only 12 lbs.; wt. per set 79 lbs. **$101.16**

SAFETY JACK SUPPORTS

SIMPLEX



Aluminum Alloy

With four of these jack supports and proper chains and jacks, the heaviest structures are handled safely. They are scientifically designed for proper weight distribution and are far stronger than wooden wedge supports.

Easily set in place and especially valuable on high scaffolds.

Also used in inverted position with any jack to pull poles, etc.

Each

No. JS-1—15 in. high, 7x10 in. platform; wt. each 9½ lbs. **$40.76**

All above, open stock.

BRODERICK AND BASCOM WIRE ROPE

GRADES OF STEEL

Wire rope is made of four different kinds of steel, resulting in four different strengths of rope, classed as follows:

Improved Plow Steel (Yellow Strand)—This is the strongest and best rope for most applications.

Plow Steel—Lower breaking strength than Improved Plow Steel, but a good serviceable rope for occasional jobs.

Mild Plow Steel—Lower breaking strength than Plow Steel. Recommended for hay stacker rope or similar jobs where strength is not important.

Iron—Used mostly as tiller rope, signal rope or trip rope. Not recommended for hoisting or pulling applications.
All of the above grades of steel can be furnished in any of the regular sizes or types of construction.

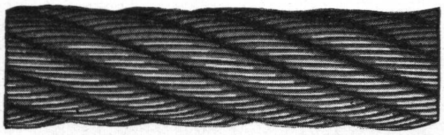
PREFORMED (FLEXSET) OR STANDARD CONSTRUCTION

Any grade or type of construction can be furnished in either Preformed (Flexset) or Standard construction. Preformed is always recommended as it costs little more than Standard construction, yet it lasts from 2 to 4 times longer.

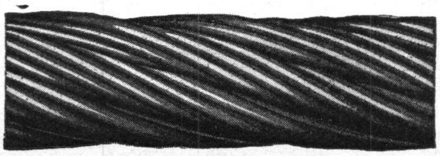
HEMP CENTER OR INDEPENDENT WIRE ROPE CENTER

Any rope can be furnished with either a Hemp Center or an Independent Wire Rope Center. Hemp Center is generally used unless the rope is being used on small diameter sheaves or drums under heavy loads, then the Independent Wire Rope Center helps prevent crushing of the rope. It does not make the rope stronger.

ROPE LAY



Right Regular Lay



Right Lang Lay

Regular Lay

Regular Lay rope is more commonly used. The wires in the strand are twisted in a direction opposite the twists of the strands in the rope.

Lang Lay

Lang Lay rope has the wires in the strand twisted in the same direction as the twist of the Strands in the rope. This gives the rope more "life" or "spring." However, this makes it harder to handle so we recommend the use of Lang Lay only in the Preformed construction. Preformed construction is easier and safer to handle. Lang Lay rope will unwind itself if the end is free to rotate.

PROPER SIZES OF SHEAVES AND DRUMS FOR WIRE ROPE

Sheaves and drums should be carefully examined for proper size, free running and proper groove diameters for most economical wire rope service. It is advisable to design the sheave and drum equipment so that the tread diameters are approximately as follows:

Average Diameters Recommended

For 6x 7 Rope, 72 times rope diameter
For 6x19 Rope, 45 times rope diameter
For 8x19 Rope, 31 times rope diameter
For 6x37 Rope, 27 times rope diameter

Various service conditions allow, and often require for economical service, changes from these diameters; for example, on larger hoisting installations, sheaves for use with 6x7 rope are sometimes set at 96 times the rope diameter and for 6x19 rope, are sometimes set as high as 90 times rope diameter.

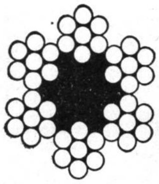
It is also true that for certain classes for service, ratios smaller than these are possible and economical, but it is advisable never to allow the sheave and drum diameters to be set below the following:

Minimum Diameters

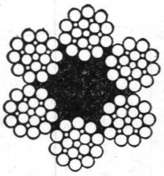
For 6x 7 Rope, 42 times rope diameter
For 6x19 Rope, 30 times rope diameter
For 8x19 Rope, 21 times rope diameter
For 6x37 Rope, 18 times rope diameter

It should be thoroughly appreciated that diameters larger than those listed as minimum will give increased rope life and, consequently, more economical service. Should there be a question as to their size or the material composing sheaves and drums for the particular installation, we would suggest that you consult with us.

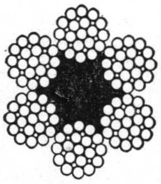
WIRE ROPE CONSTRUCTIONS



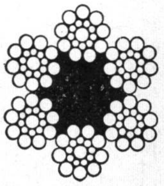
6x7



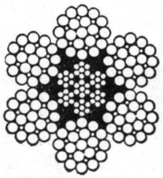
6x16 F. W.



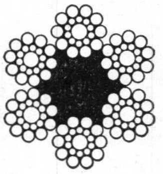
6x19 F. W.



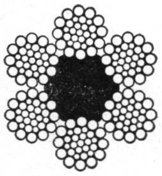
6x19 Seales



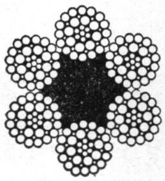
6x19 F. W.
IWRC



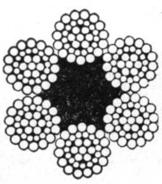
6x21 Modified
Seales



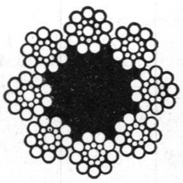
6x31 Modified
Seales



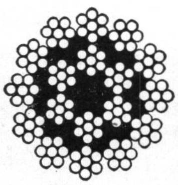
6x31 F. W.



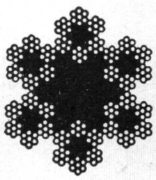
6x37



8x19 Seales



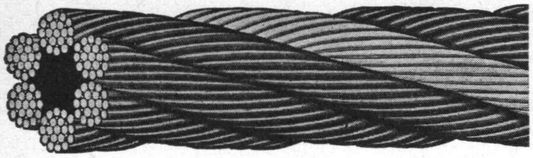
18x7 Non-
Rotating

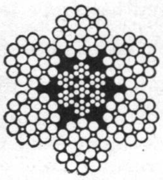


6x42

BRODERICK AND BASCOM WIRE ROPE

IMPROVED PLOW STEEL "YELLOW" STRAND" "FLEXSET" PREFORMED


Hemp Center

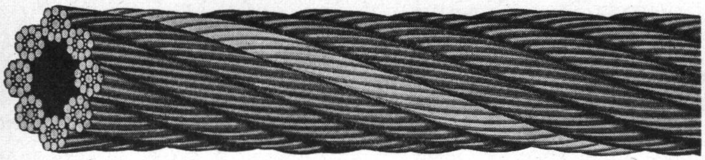

Ind. Wire Rope Center

6x19—6 Strands of 19 Wires Each

The most powerful rope made. This is the work horse of the Wire Rope family. Recommended for most tough hoisting jobs.

Wires used in construction are preformed before assembly and will not fly apart. Can be cut or spliced without necessity of seizing.

Diam., in.	Hemp Center per foot	IWRC, per foot	Wt. per foot, lbs.	Strength in tons	Working load, tons	Diam. drum or sheave, in.
¼	$0.22	$0.27	.10	2.74	.55	11
5/16	.23	.29	.16	4.26	.85	14
⅜	.26	.32	.23	6.10	1.22	17
7/16	.27	.34	.31	8.27	1.65	20
½	.31	.38	.40	10.7	2.14	23
9/16	.34	.43	.51	13.5	2.7	25
⅝	.42	.48	.63	16.7	3.34	28
¾	.60	.68	.90	23.8	4.76	34
⅞	.75	.86	1.23	32.2	6.44	39
1	.92	1.06	1.60	41.8	8.36	45
1⅛	1.14	1.26	2.03	52.6	10.5	51
1¼	1.39	1.52	2.50	64.6	13	56
1⅜	1.62	1.88	3.03	77.7	15.5	62
1½	1.90	2.10	3.60	92.0	18.4	68



8x19—8 Strands of 19 Wires Each; Hemp Center

An extra flexible hoisting rope. Use where flexibility is a deciding factor. Not recommended in IWRC construction. Excellent as an elevator hoisting rope.

Diam., in.	Per foot	Wt. per foot, lbs.	Strength in tons	Working load, tons	Diam. drum or sheave, in.
¼	$0.26	.09	2.35	.47	8
5/16	.28	.14	3.65	.73	10
⅜	.31	.20	5.24	1.04	12
7/16	.32	.28	7.09	1.41	14
½	.37	.36	9.23	1.84	16
9/16	.41	.46	11.6	2.32	17
⅝	.50	.57	14.3	2.86	19
¾	.71	.82	20.5	4.1	23
⅞	.90	1.11	27.7	5.5	27
1	1.11	1.45	36.0	7.2	31
1⅛	1.37	1.84	45.3	9.1	35
1¼	1.66	2.27	55.7	11.1	39
1⅜	1.94	2.74	67.1	13.4	43
1½	2.30	3.26	79.4	15.9	47

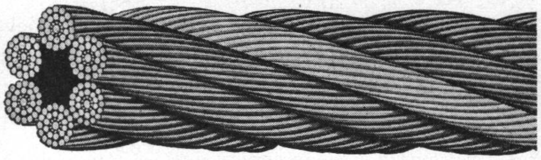
Standard Construction

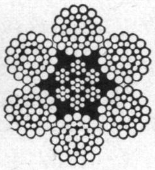
All above ropes can be furnished in standard construction, selling at a slightly lower price, but not having the life of "Flexset" Preformed.

Lay

All above ropes can also be furnished in either Regular Lay or Lang Lay at the same price.

IMPROVED PLOW STEEL "YELLOW STRAND" "FLEXSET" PREFORMED


Hemp Center

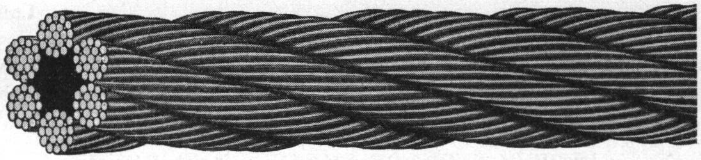

Ind. Wire Rope Center

6x37—6 Strands of 37 Wires Each

Special extra flexible hoisting rope. Recommended where a 6x19 rope would be too stiff or where the diameter of drum is too small for 6x19 construction.

Diam., in.	Hemp Center per foot	IWRC, per foot	Wt. per foot, lbs.	Strength in. tons	Working load, tons	Diam. drum or sheave, in.
¼	$0.32	$0.40	.10	2.59	.51	7
5/16	.33	.41	.16	4.03	.80	8
⅜	.34	.43	.22	5.77	1.15	10
7/16	.36	.44	.30	7.82	1.56	12
½	.38	.48	.39	10.2	2.04	14
9/16	.43	.53	.49	12.9	2.58	15
⅝	.52	.60	.61	15.8	3.16	17
¾	.74	.85	.87	22.6	4.52	20
⅞	.93	1.07	1.19	30.6	6.12	24
1	1.15	1.33	1.55	39.8	7.96	27
1⅛	1.43	1.57	1.96	50.1	10.0	30
1¼	1.73	1.90	2.42	61.5	12.3	34
1⅜	2.02	2.22	2.93	74.1	14.8	37
1½	2.40	2.64	3.49	87.9	17.6	41

PLOW STEEL "FLEXSET" PREFORMED



6x19—6 Strands of 19 Wires Each; Hemp Center

This rope has the same general application and use as 6x19 Improved Plow Steel except it is used where lower working loads are required. Having less strength it is less expensive.

Diam., in.	Per foot	Wt. per foot, lbs.	Strength in tons	Working load, tons	Diam. drum or sheave, in.
¼	$0.21	.10	2.39	.47	11
5/16	.22	.16	3.71	.74	14
⅜	.24	.23	5.31	1.06	17
7/16	.26	.31	7.19	1.44	20
½	.29	.40	9.35	1.87	23
9/16	.32	.51	11.8	2.36	25
⅝	.40	.63	14.5	2.9	28
¾	.56	.90	20.7	4.14	34
⅞	.71	1.23	28.0	5.6	39
1	.88	1.60	36.4	7.3	45
1⅛	1.08	2.03	45.7	9.1	51
1¼	1.32	2.50	56.2	11.2	56
1⅜	1.53	3.03	67.5	13.5	62
1½	1.82	3.60	80.0	16.0	68

Standard Construction

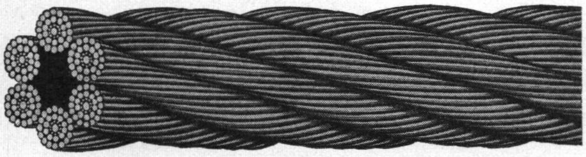
All above ropes can be furnished in standard construction, selling at a slightly lower price but not having the life of "Flexset" Preformed.

Lay

All above ropes can also be furnished in either Regular Lay or Lang Lay at the same price.

BRODERICK AND BASCOM WIRE ROPE

PLOW STEEL
"FLEXSET" PREFORMED



6x37—6 Strands of 37 Wires Each; Hemp Center

This special extra flexible rope has the same general application and use as 6x37 Improved Plow Steel except it is used where lower working loads are required. Having less strength it is less expensive.

Diam., in.	Bright, per foot	Wt. per foot, lbs.	Strength in tons	Working load, tons	Diam. drum or sheave, in.
¼	$0.30	.10	2.25	.45	7
5/16	.31	.16	3.50	.7	8
⅜	.33	.22	5.02	1.	10
7/16	.34	.30	6.80	1.36	12
½	.36	.39	8.85	1.77	14
9/16	.41	.40	11.2	2.24	15
⅝	.49	.61	13.7	2.74	17
¾	.70	.87	19.6	3.92	20
⅞	.89	1.19	26.6	5.32	24
1	1.10	1.55	34.6	6.9	27
1⅛	1.36	1.96	43.5	8.7	30
1¼	1.64	2.42	53.5	10.7	34
1⅜	1.92	2.93	64.5	12.9	37
1½	2.28	3.49	76.4	15.3	41

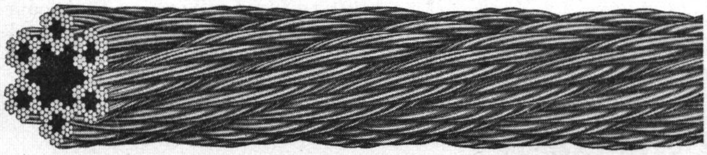
Standard Construction

The above rope can be furnished in standard construction, selling at a slightly lower price but not having the life of "Flexset" Preformed.

Lay

All above ropes can also be furnished in either Regular Lay or Lang Lay at the same price.

IRON TILLER OR HAND
STANDARD CONSTRUCTION



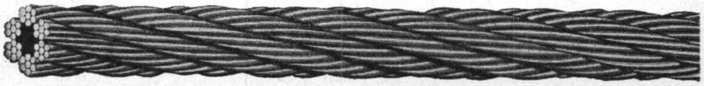
Composed of 6 Ropes and a Hemp Center, Each Rope Consisting of 6 Strands of 7 Wires Each and a Hemp Core

This is the most flexible wire rope made. Because of the fineness of the wires this rope should not be subjected to much abrasive wear. Used extensively for hand ropes on passenger and freight elevators.

Diam., in.	Bright, per foot	Wt. per foot, lbs.	Approx. circumference, in.	Breaking strength, tons
¼	$0.38	.07	¾	.584
5/16	.40	.11	1	.908
⅜	.45	.16	1⅛	1.30
7/16	.47	.21	1¼	1.77
½	.53	.28	1½	2.30
9/16	.69	.35	1¾	2.90
⅝	.72	.43	2	3.57

WIRE SASH AND BELL CORDS

STANDARD IRON



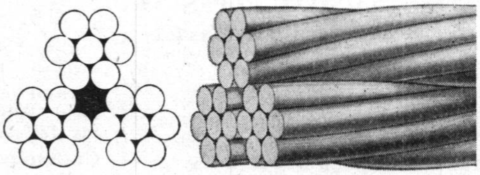
6x7—6 Strands of 7 Wires Each; Cotton Center

Used principally for window weights, bell cords, automobile brakes, whistles and shades. Soft annealed iron.

Diam., in.	Bright, per foot	Galv., per foot	Wt. per 100 ft., lbs.	Breaking strength in lbs. Bright	Breaking strength in lbs. Galv.
1/16	$0.04	$0.06	.6	140	126
3/32	.05	.06	1.3	315	283
⅛	.05	.07	2.3	560	504
5/32	.06	.08	3.8	840	756
3/16	.07	.10	5.3	1150	1035
7/32	.09	.12	7.2	1570	1413
¼	.10	.14	9.4	2040	1836

GUARD RAIL ROPE

GALVANIZED STEEL



3 Strands, 7 Wires to the Strand

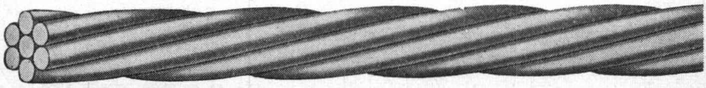
This rope has been adopted as standard in many states as guard rail cable along highways. ¾ in. 3x7 is generally used, although 1 in. 7x7 and 1 in. 6x7 can also be furnished.

We can furnish this cable in any length or grade of galvanizing to meet the specifications of any State Highway Department.

When writing for prices, state quantity and for what state desired.

STEEL WIRE STRAND

GALVANIZED STEEL



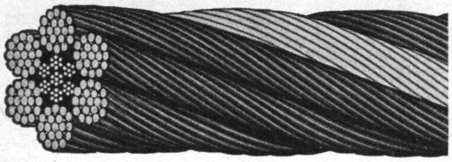
7 Wires Twisted into a Single Strand

Extra galvanized Siemens Martin strand is used where the ordinary single galvanized strand is not sufficiently strong.

	Standard Sgle. Galv.		Siemens Martin Extra Galv.			
Diam., in.	Per 1000 ft.	Break. strength, lbs.	Per 1000 ft.	Break. strength, lbs.	Size wire, in.	Wt. per 1000 ft., lbs.
⅛	$ 28.90	540	$	910	.041	31.8
5/32	33.14	870	.....	...	.052	51.3
3/16	34.60	1150	38.98	1900	.062	72.9
¼	47.34	1900	53.32	3150	.080	121
5/16	63.66	3200	72.90	5350	.104	205
⅜	78.96	4250	91.78	6950	.120	273
7/16	101.90	5700	118.52	9350	.145	399
½	124.56	7400	143.36	12100	.165	517
⅝	210.84	11600	240.38	19100	.207	813

SPECIAL PURPOSE WIRE ROPES

FOR DIRT MOVING EQUIPMENT



Improved Plow Steel "Yellow Strand" "Flexset" Preformed
6x19, Lang Lay, IWRC

This rope is carried in 300 and 500 ft. reels to fit on all standard makes of dirt moving equipment. Also carried on large reels for long continuous lengths.

Diam., in.	Per foot	Wt. per foot, lbs.	Strgth. in tons	Working load, tons
½	$.....	.40	10.7	2.14
$\frac{9}{16}$	.....	.51	13.5	2.7
⅝	.....	.63	16.7	3.34

Note—Available in other sizes. See detailed listings of "Flexset" Preformed Improved Plow Steel Rope, 6x19 construction, on page 568.

EXCAVATING MACHINE ROPES

General recommendations are as follows:

Hoist Lines and Holding Lines

The popular construction for most machines is 6x19 Improved Plow Steel "Yellow Strand" in either Regular Lay or Lang Lay. For heavy digging use IWRC to prevent drum from crushing rope.

For detailed listings see page 568.

Drag Lines and Digging Lines

6x19 Improved Plow Steel "Yellow Strand" "Flexset" Preformed, Lang Lay, IWRC construction is recommended for this tough service.

For detailed listings see page 568.

Boom Lines

6x19 Improved Plow Steel "Yellow Strand," Standard construction, Regular Lay, hemp center, is generally used.

For detailed listings see page 568.

Trip Lines

6x19 Plow Steel is used for hand trip lines. Use Improved Plow Steel "Yellow Strand" if shovel is equipped with a power trip.

For detailed listings see page 568.

EXCAVATING MACHINE ROPES
(Continued)

Swing Lines

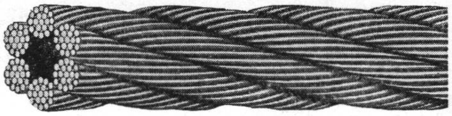
8x19 Improved Plow Steel "Yellow Strand" "Flexset" Preformed, Regular Lay, hemp center, gives best results.

For detailed listings see page 568.

Rack and Crowd Ropes

6x19 Improved Plow Steel "Yellow Strand" "Flexset" Preformed, Regular or Lang Lay, IWRC is recommended because these ropes receive much abuse.

For detailed listings see page 568.



Bucket Dump Lines

6x19 Improved Plow Steel "Yellow Strand" "Flexset" Preformed, Regular Lay, hemp center is generally used.

For detailed listings see page 568.

Closing Lines

6x19 Improved Plow Steel "Yellow Strand" "Flexset" Preformed is generally used. Where sheaves are small use 6x37. IWRC construction is needed to prevent flattening and strand distortion at the bucket on some types of clam shells.

For detailed listings see page 568.

Drag Scraper

Haul back and load lines should be 6x19 Improved Plow Steel "Yellow Strand" "Flexset" Preformed Seales construction.

For detailed listings see page 568.

Slack Line Excavator

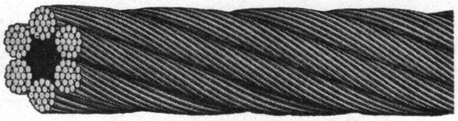
Plow steel is ordinarily used for track cable. The load line, tension line, and bridle cable should be 6x19 Improved Plow Steel "Yellow Strand" "Flexset" Preformed, hemp center.

For detailed listings see page 568.

Note

For recommendations on any individual machine we suggest that you write us for further information.

TRENCH HOE ROPES



Digging Lines

Since a Trench Hoe or Pull Shovel is a combination of dipper and dragline, the same type of ropes are furnished on all three.

The digging line should always be a 6x19 "Flexset" "Yellow Strand" Preformed, Lang Lay, IWRC.

For detailed listings see page 568.

Boom Hoist Lines

The boom hoist line is an active load line and should be a 6x19 "Flexset" Preformed "Yellow Strand," Lang Lay with IWRC.

For detailed listings see page 568.

Shear Leg Cable

The same specification is used for boom and shear leg cables. Other ropes such as driver cables, gantry lines, etc. are used on some machines.

When ordering rope, specify the model of machine on which the rope is to be used and we will give you our specific recommendations.

BACK FILLER ROPES

Drag Lines

Use 6x19 "Flexset" Preformed "Yellow Strand," Lang Lay, with IWRC.

For detailed listings see page 568.

Hoist Lines

Use 6x19 "Flexset" Preformed "Yellow Strand" Regular Lay, hemp center. If drum crushing occurs use 6x19 "Flexset" Preformed "Yellow Strand" Lang Lay, with IWRC.

For detailed listings see page 568.

Boom Suspension and Boom Hoist Lines

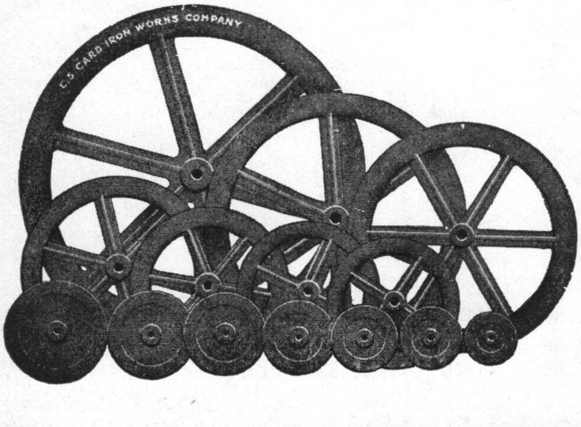
6x19 "Yellow Strand" ropes in Regular Lay, hemp center, are suitable for boom suspension and boom hoist lines.

If drum crushing occurs on the boom hoist line use 6x19 "Flexset" Preformed "Yellow Strand," Regular Lay, with IWRC.

For detailed listings see page 568.

ROPE HAULAGE EQUIPMENT

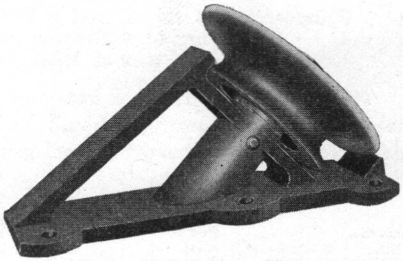
"CARD"



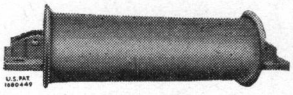
C. S. Card has been manufacturing rope haulage equipment since 1892 and has developed a complete line that has been thoroughly mine and time tested.

We suggest the use of "Card" Standard Rope Haulage Equipment wherever possible. You get the advantage of prompt shipment from stock, prompt replacement of parts, and thoroughly developed design.

Complete Information and Prices on Request



Style "A" Curve Sheave



Standard Rope Roller

SPECIAL PURPOSE WIRE ROPES

WINCH LINES

We have found that in diameters ½ in. and smaller 6x19 "Flexset" Preformed "Yellow Strand", Regular Lay, IWRC provides the necessary strength, satisfactory wearing quality, and reasonable flexibility, and will give economical service.

In sizes ⅝ in. through ⅞ in. we recommend 6x31 "Flexset" Preformed "Yellow Strand", Regular Lay, IWRC; and in sizes 1 in. and larger, in order to secure maximum flexibility, we recommend 6x37 "Flexset" Preformed "Yellow Strand", Regular Lay, Independent Wire Rope Center.

For detailed listing see page 568.

As Winch Lines are subject to severe drum crushing, Independent Wire Rope Center is always recommended. Because of the severe spooling conditions they should be Preformed. "Yellow Strand" grade is necessary to provide maximum breaking strength.

We recommend that Winch Lines be factory equipped with a dirigo hook spliced in. If line is regularly used in a checker hitch, it would be preferable to use a choker hook, or better still provide choker slings for making the attachment to the load.

WIRE ROPE FOR MINES

Hoist Ropes

6x19 Improved Plow Steel, "Yellow Strand" "Flexset" Preformed, Regular Lay, hemp center is the most economical rope for this service. These ropes will be laid up in a special lubricant for protection against mine waters.

For detailed listing see page 568.

Slope Rope

Ordinarily a 6x19 Improved Plow Steel "Yellow Strand" "Flexset" Preformed, Lang Lay, hemp center, Seales construction is specified for this application. These ropes will be laid up in a special lubricant for protection against mine waters.

For detailed listing see page 568.

Mining Machine Cable

For use on coal cutting and mining machines, ½ and ⅝ in. are the most popular sizes in 6x37 Plow Steel, "Flexset" Preformed, Regular Lay, with IWRC.

For detailed listing see page 568.

Slusher Rope

Recommended for use on slusher scrapers in mines. Most popular rope is a 6x19 Plow Steel, "Flexset" Preformed Regular Lay, IWRC, in sizes ⅜ and ½ in.

For detailed listing see page 568.

Note—All mine ropes are subjected to mine waters which are usually acid, and it is imperative that the ropes be kept lubricated at all times.

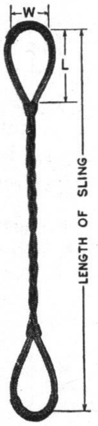
Note—Any special problems connected with mining ropes should be referred to our Engineering Department for solution.

WIRE ROPE SAFETY SLINGS

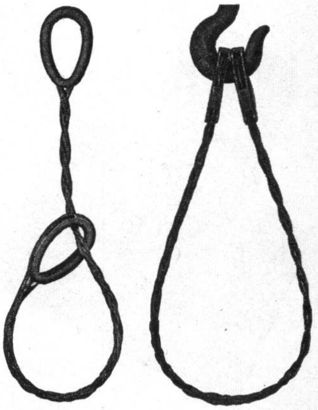
"YELLOW STRAND"—BRAIDED

Flexible, light-weight and kink-proof, this patented sling will hoist a locomotive or a barrel with equal security. Each sling has the stamina of "Yellow Strand" wire rope. Braided by expert splicers, its exceptional pliability enables it to grip a load softly, snugly and without damage to a finished surface.

By adding hooks, thimbles, links, shackles, turnbuckles or other fittings, "Yellow Strand" Braided Safety Slings are adaptable to products of varied size and shape. If you need a special sling for your special problem B&B engineers will design one promptly.



Type M-1-AA
With Loops



Type M-1-BB—With Thimbles

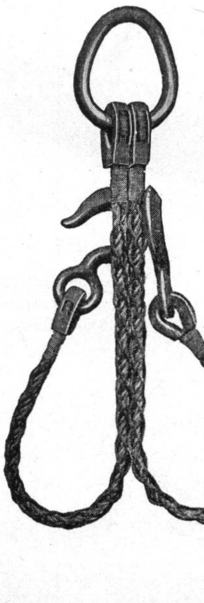
Type M-1—Eight Part

Single slings of braided construction using eight parts of "Yellow Strand" Wire Rope. Highly recommended for flexibility, ease of handling and all-around satisfactory service.

These slings may be furnished in any length with either heavily served loop ends or thimbles. Hooks, rings, shackles, links or sockets may be added.

When used as a choker hitch thimbles must be used to prevent chafing the rope. Thimbles are so designed that either will pass through the other, thus permitting choker slings to be changed end for end to equalize wear on the rope.

Eight parts of	Safe Loads in Tons: Vertical	Safe Loads in Tons: Choker Hitch	Basket Hitch 60°	Basket Hitch 90°	Basket Hitch 120°	Loop, in. W	Loop, in. L	Thimble, in. W	Thimble, in. L	Thimble, in. Thickness
3/32	.5	.37	.87	.71	.5	2	4	1¼	2¾	⅝
⅛	.8	.58	1.39	1.13	.8	2½	5	1¼	2¾	⅝
3/16	1.8	1.3	3.2	2.6	1.8	3½	7	2¼	4½	⅞
¼	3.2	2.4	5.6	4.6	3.2	4½	9	2½	5	1⅛
5/16	5.0	3.8	8.7	7.1	5.0	5	10	3½	7	1½
⅜	7.0	5.3	12.2	10.0	7.0	6	12	4	8	1¾
7/16	9.4	7.1	16.3	13.3	9.4	6½	13	4	8	1¾
½	12.0	9.1	21.0	17.1	12.0	7	14	5	10	2
9/16	15.1	11.3	26.2	21.4	15.1	8	16	6	12	2½
⅝	18.6	13.9	32.3	26.3	18.6	10	20	7	14	3⅛
¾	26.6	19.	46.1	37.6	26.6	12	24	7½	15	3⅝
⅞	36.0	27.0	62.5	51.1	36.0	15	30	8	16	4⅛
1	47.0	35.2	81.5	66.5	47.0	15	30	8½	17	4⅞



Type ML-2—Two Legs of Eight Parts Each

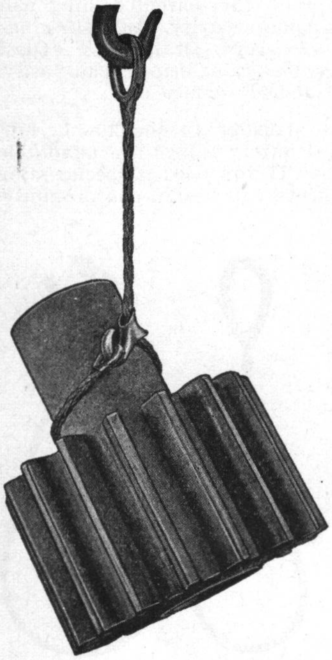
One of the most popular bridle slings. Consists of a sling having two legs linked together at one end by a pear-shaped link. Any combination of fittings may be selected.

Eight parts of	Safe load in tons 60°	Safe load in tons 90°	Safe load in tons 120°	Pear-shaped links, in. Inside	Pear-shaped links, in. Thick.
3/32	.87	.71	.5	2½x 3¾	⅝
⅛	1.39	1.13	.8	3 x 4½	¾
3/16	3.2	2.6	1.8	4 x 6	1
¼	5.6	4.6	3.2	5½x 8	1⅜
5/16	8.7	7.1	5.0	6½x10	1⅝
⅜	12.2	10.0	7.0	8 x12	2
7/16	16.3	13.3	9.4	9 x13½	2¼
½	21.0	17.1	12.0	10 x15	2½
9/16	26.2	21.4	15.1	11½x17	2⅞
⅝	32.2	26.3	18.6	13 x19½	3¼
¾	46.1	37.6	26.6	16 x24	4
⅞	62.5	51.1	36.0	18 x27	4½
1	81.5	66.5	47.0	20 x30	5

Prices on Request

WIRE ROPE SAFETY SLINGS

YELLOW STRAND BRAIDED



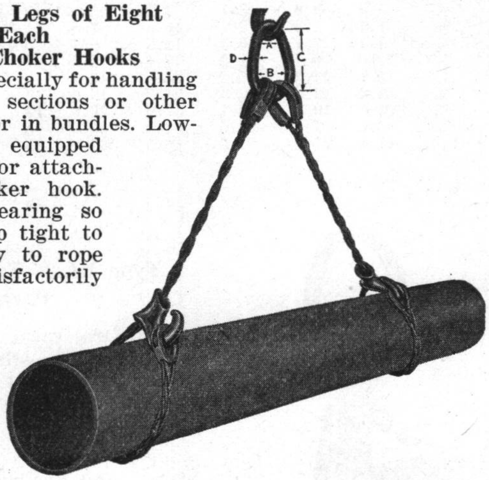
Type MS-1—Eight Part

A single sling with loop, or preferably thimble, in upper end, small thimble in lower end and a sliding choker hook. Especially designed for handling short objects in a choker hitch. Holds securely even when load is unbalanced. For longer loads, Type MS-2 slings are recommended.

Measure length from bearing of thimble to bearing of thimble with rope straight.

Eight parts of	Safe load in tons	Loop, in. W	Loop, in. L	Thimble, in. W	Thimble, in. L	Thickness	Size of sliding hook
3/16	1.3	3½	7	2¼	4½	⅞	3
¼	2.4	4½	9	2½	5	1⅛	4
5/16	3.8	5	10	3½	7	1½	5
⅜	5.3	6	12	4	8	1¾	6
7/16	7.1	6½	13	4	8	1¾	7
½	9.1	7	14	5	10	2	8

Type MS-2—Two Legs of Eight Parts Each With Sliding Choker Hooks

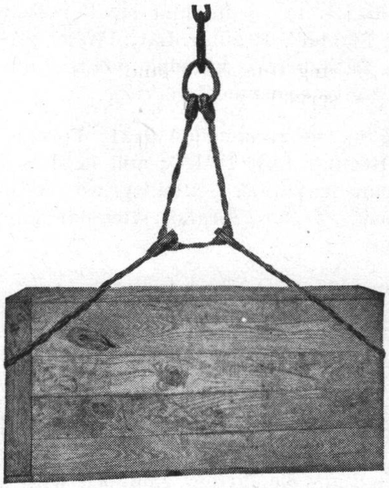


Recommended especially for handling pipe, poles, culvert sections or other long objects singly or in bundles. Lower end of each leg equipped with steel thimble for attaching to sliding choker hook. Hook has broad bearing so that it will snub up tight to load without injury to rope itself. Will work satisfactorily on irregular loads if protection for rope is provided.

Measure length from bearing of thimble to bearing of thimble with rope straight.

Eight parts of	Safe Load in Tons 60°	90°	120°	Pear Shaped Links, in. A	B	C	D	Size of sliding hook
3/16	2.4	1.9	1.3	1¾	3½	5¼	⅞	3
¼	4.2	3.5	2.4	2½	5	7½	1¼	4
5/16	6.5	5.3	3.7	3	6	9	1½	5
⅜	9.1	7.5	5.2	3½	7	10½	1¾	6
7/16	12.2	10.0	7.0	4	8	12	2	7
½	15.7	12.8	9.0	4½	9	13½	2¼	8

Prices on Request.



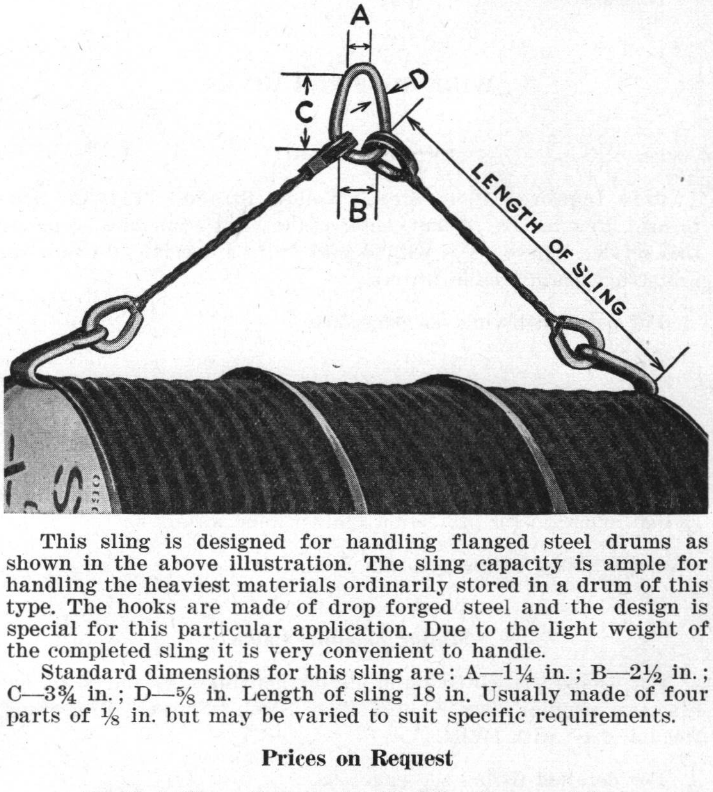
Type M-9—For Crates

Used for handling crates and boxes—especially recommended for handling crates of plate glass.

To be secure angle between lower sling should approximate 120°.

B & B sling engineers will be glad to make recommendations for your use if you will advise us details, dimensions and weights of both the largest and smallest crates to be handled and also the available headroom.

Prices on Request



This sling is designed for handling flanged steel drums as shown in the above illustration. The sling capacity is ample for handling the heaviest materials ordinarily stored in a drum of this type. The hooks are made of drop forged steel and the design is special for this particular application. Due to the light weight of the completed sling it is very convenient to handle.

Standard dimensions for this sling are: A—1¼ in.; B—2½ in.; C—3¾ in.; D—⅝ in. Length of sling 18 in. Usually made of four parts of ⅛ in. but may be varied to suit specific requirements.

Prices on Request

Braided Slings Compared with Wire Rope and Iron Chain Slings

Braided—8 Part Size of rope used, in.	Complete body dia., in.	Average wt. per ft., lbs.	"Yellowstrand" Rope Diam. rope, in.	Average wt. per ft., lbs.	Iron Chain Diam. links, in.	Weight per ft., lbs.
3/32	7/16	.104	¼	.10	5/16	1.15
⅛	⅝	.176	5/16	.16	⅜	1.66
3/16	⅞	.424	7/16	.31	9/16	3.5
¼	1⅛	.80	⅝	.63	¾	6.2
5/16	1⅜	1.28	¾	.90	⅞	8.2
⅜	1⅝	1.84	1	1.60	1⅛	13.1
7/16	2	2.48	1⅛	1.96	1¼	16.
½	2¼	3.20	1⅜	2.93	1½	23.4
9/16	2½	4.08	1½	3.49	1⅝	27.4
⅝	2⅞	5.04	1¾	4.75	1⅞	36.5
¾	3½	7.20	2¼	7.85	2¼	54.5
⅞	4	9.84	2½	9.69	2½	67.
1	4½	12.8	3	13.95	3	94.

CABLE CUTTERS

MORSE-STARRETT

No. 1A

Hammer Type

Designed to cut cable with the minimum of effort and danger.

The patented blade and die prevent flattening of the cable and displacing the lay of the strands in the process of cutting. Cuts the finest wire cleanly.

All wearing parts made of the highest grade steel selected and heat treated for the work to be performed.

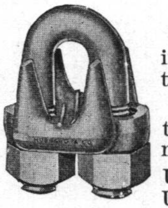
The cutting edge of the blade is self-forming and self-hardening under use.

Nos.	Each	Cap. cable up to, in.	Ht., in.	Dia. at base, in.	Wt. ea., lbs.
1	$12.00	1	6⅝	3½	9
1A	21.00	1 1/16	7	6	20
2	35.00	1½	9	7¾	38

One in a box.

WIRE ROPE CLIPS

DROP FORGED



Galvanized

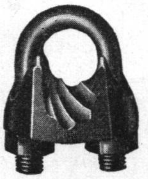
Made of high grade forging steel. Clean, smooth threads and finish.

Hot galvanized under the double-dip hot galvanized process.

U-bolts equipped with USS semi-finished nut.

For rope, in.	Per 100	Wt. per 100, lbs.	For rope, in.	Per 100	Wt. per 100, lbs.
¼	$40.00	18	⅞	$120.00	242
5/16	40.00	30	1	125.00	264
⅜	45.00	47	1⅛	145.00	332
7/16	50.00	71	1¼	205.00	448
½	50.00	73	1⅜	270.00	488
⅝	60.00	101	1½	275.00	544
¾	85.00	157			

MALLEABLE IRON



Black

Certified malleable iron base. Open hearth steel U-bolt fitted with hexagon nuts.

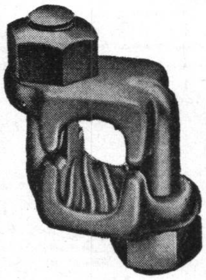
Dependable, economical and safe.

For rope, in.	Per 100	Wt. per 100, lbs.	For rope, in.	Per 100	Wt. per 100, lbs.
¼	$ 9.35	13	¾	$ 35.00	86
5/16	10.40	15½	⅞	50.00	136
⅜	14.40	23	1	60.00	200
7/16	16.15	28	1⅛	95.00	250
½	18.50	36	1¼	112.00	315
9/16	24.50	56	1⅜	200.00	495
⅝	24.50	58½	1½	215.00	530

Open stock.

WIRE ROPE CLIPS

FIST GRIP



Drop Forged, Galvanized

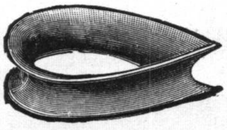
Cannot crush, distort or weaken the rope, no damaged rope ends to be cut off and wasted. Cannot be installed upside-down as saddles are identical.

For rope, in.	Each	Wt. per 100, lbs.	For rope, in.	Each	Wt. per 100, lbs.
¼	$0.40	21	¾	$0.85	134
5/16	.40	25½	⅞	1.20	220
⅜	.45	37½	1	1.25	268
7/16	.50	48	1⅛	1.45	296
½	.50	60	1¼	2.05	403
⅝	.60	105	1½	2.75	658

Open stock.

WIRE ROPE THIMBLES

STEEL



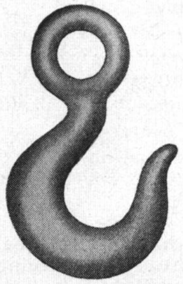
Galvanized

Diam. rope, in.	Per 100	Wt. per 100, lbs.	Diam. rope, in.	Per 100	Wt. per 100, lbs.
¼	$ 5.85	4	⅞	$26.40	60
5/16	7.25	5	1	36.00	80
⅜	8.70	9	1⅛	59.70	120
½	17.60	15	1¼	69.12	160
⅝	17.60	35	1½	188.36	270
¾	20.75	50			

Open stock.

DIRIGO HOOKS

DROP FORGED STEEL



No. 35½ is forged alloy steel.

For other hooks see page 578.

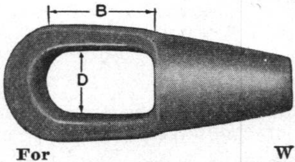
Nos.	Each	Safe working load, lbs.	Rope diam., in. Yellow Strand	Plow Steel	Wt. ea., lbs.
23	$0.43	1400	¼	5/16	¾
24	.53	1700	5/16	..	1
25	.73	3000	⅜	⅜–7/16	1½
26	1.05	4200	7/16	½	2¼
27	1.50	5200	½	9/16	3
28	2.10	6200	9/16	⅝	4¾
29	2.85	7500	⅝	¾	6
30	3.70	10000	¾	..	8½
31	4.70	11700	..	⅞	11¼
32	6.40	13700	⅞	1	16
33	9.40	17000	1	1⅛	20¼
34	18.50	21200	1⅛	1¼	33
35	35.00	30000	1¼–1⅜	1⅜–1½	50
35½	75.00	35000	1½	1⅝	50

Open stock.

Note—Above hook can be furnished with Laughlin Clevis having bolt, slotted nut and cotter.

WIRE ROPE SOCKETS

CLOSED PATTERN

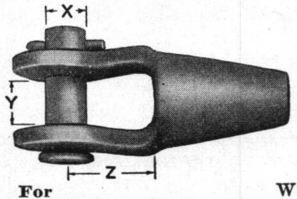


Drop Forged High Grade Steel

Carefully designed for maximum safety.

For rope, in.	Each	Wt. each, lbs.	For rope, in.	Each	Wt. each, lbs.
¼	$0.75	½	¾	$2.10	4½
5/16	.75	⅞	⅞	2.90	7
⅜	.85	⅞	1	4.00	11
7/16	1.15	1½	1⅛	4.60	16
½	1.15	1½	1¼	7.00	22
9/16	1.55	3	1⅜	7.50	22
⅝	1.55	3	1½	10.50	28

OPEN PATTERN



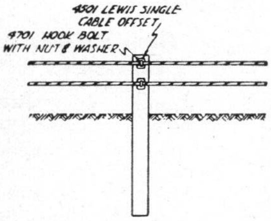
Drop Forged High Grade Steel

Superior workmanship on all contact surfaces.

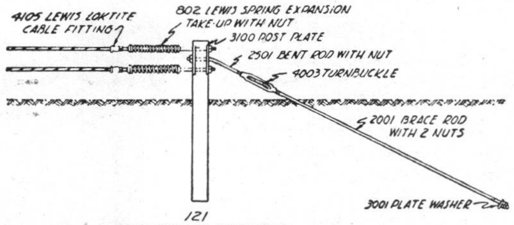
For rope, in.	Each	Wt. each, lbs.	For rope, in.	Each	Wt. each, lbs.
¼	$1.05	⅞	¾	$3.10	6
5/16	1.05	1⅛	⅞	3.90	10
⅜	1.40	1⅛	1	5.25	15½
7/16	1.85	2¼	1⅛	5.75	22
½	1.85	2¼	1¼	9.25	32
9/16	2.40	3¾	1⅜	9.75	32
⅝	2.40	3¾	1½	13.00	46

Open stock.

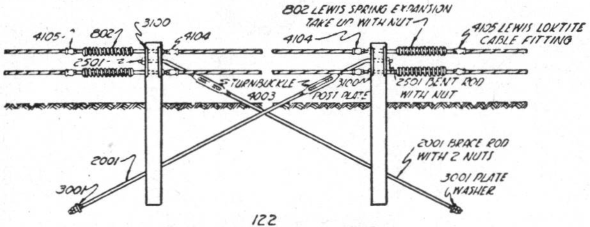
CABLE GUARD RAIL


4501 LEWIS SINGLE CABLE OFFSET
4701 HOOK BOLT WITH NUT & WASHER

521
OFFSET ASSEMBLY


4105 LEWIS LOKTITE CABLE FITTING
802 LEWIS SPRING EXPANSION TAKE-UP WITH NUT
3100 POST PLATE
2501 BENT ROD WITH NUT
4003 TURNBUCKLE
2001 BRACE ROD WITH 2 NUTS
3001 PLATE WASHER

121
END ANCHOR ASSEMBLY


4105
802
3100
4104
2501
TURNBUCKLE
4003
802 LEWIS SPRING EXPANSION TAKE UP WITH NUT
4104
3100
POST PLATE
2501 BENT ROD WITH NUT
4105 LEWIS LOKTITE CABLE FITTING
2001
3001
2001 BRACE ROD WITH 2 NUTS
3001 PLATE WASHER

122
INTERMEDIATE BRACING ASSEMBLY

HIGHWAY CABLE GUARD FENCE FITTINGS
As Required by State Highway Departments

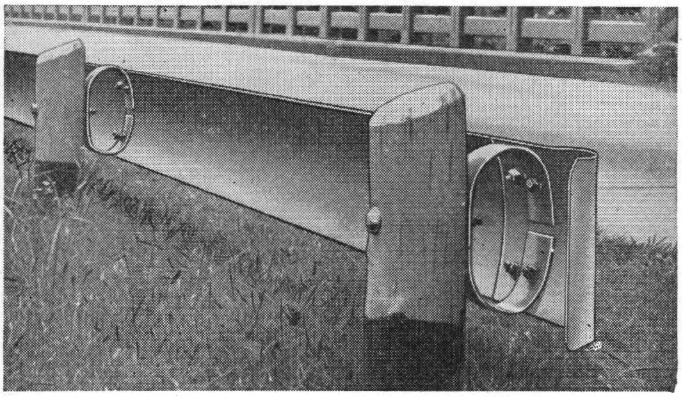
	Per assembly
No. 121—End anchor assembly, with spring take-up; wt. complete 93 lbs.	$ 48.60
No. 123—End anchor assembly, fixed, no springs; wt. complete 60 lbs.	30.33
No. 122—Intermediate anchor assembly, with spring take-up; wt. complete 194 lbs.	117.30
No. 521—Offset with hook bolt, for 8 in. line post (2 to a post); wt. each 6 lbs.	3.02
No. 522—Offset with hook bolt, for 10 in. line post (2 to a post); wt. each 7 lbs.	3.57

Open stock.

Note—Nos. 521 and 522 are priced for one assembly only. Figure two assemblies per post, for two lines of cable.

HIGHWAY GUARD RAIL

TUTHILL



Six Reasons Why Tuthill Highway Guards Should be Your Standard Equipment

1—Strongest shock cushioning guard rail made.
2—Cushions shock of impact, deflecting car safely.
3—Exclusive convex shaped steel plate rails.
4—Exceeds all present State strength specifications for guards of this type; approved by Bureau of Public Roads.
5—Highest visibility of any guard rail made.
6—Easiest to erect; cheapest to maintain.

Specifications

Rails—12 in. wide; No. 9 ga. for 10, 12½ or 16 ft. post centers. .40-.50 (SAE Nos. 1040-1045) carbon steel, hot rolled, cold formed.

Rail Tensile Strength—75,000 lbs. minimum per square inch.

Spring Brackets—No. 4—¼x4 in. SAE No. 1095 spring steel, tempered.

Support Bolts—⅝x9½ in. machine bolts (or length dependent on post size). Galvanized.

Rail Bolts—⅝x1⅜ in. button head machine bolts, galvanized.

Posts—Any standard wood, steel or concrete posts, to be drilled for support springs. Posts not furnished unless required.

Weight of Rails—No. 9 ga., about 8 lbs. per foot. Complete with fittings.

Weight of End Pieces—14 lbs. each.

Paint—Rails and spring brackets furnished with shop coat primer.

Tuthill Guard Rail is furnished with brackets, bolts, nuts and washers. Curved end pieces are furnished as an extra.

Additional Information and Prices on Request

STREET NAME SIGNS

BANCROFT ST.
EVERGREEN RD.

The most outstanding design in street name signs for appearance, legibility and permanence.

These signs are permanent in character because of the heavy material used in the manufacture from rust-proofed or galvannealed steel. 6 in. high name plates have heavily embossed 4 in. letters and border assuring unusual strength. Embossed parts enameled white, background black or as specified.

	Each
No. GN-1-4—Sign complete with ornamental bracket, less post; wt. each 16 lbs.	$10.00
Posts—2 in. galv. pipe, 10 ft. 5 in. long; wt. each 39 lbs.	3.65

Open stock.

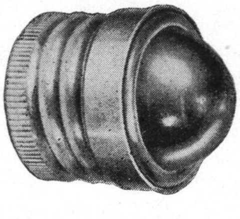
TRAFFIC SIGNS

All types of traffic stop and warning signs can be furnished with either plain lettering or reflectorized buttons. A special catalog covering all types of traffic markings will be sent on request.

REFLECTOR BUTTONS

ONE-PIECE

Crystal, Red, Yellow, Amber or Green



The reflecting element is pure aluminum fused directly into the reflecting surface of the glass lens. Air or moisture cannot enter to deteriorate the reflecting surface.

Easily and quickly installed. The only preparation necessary is to drill a hole in the sign board the required diameter and depth.

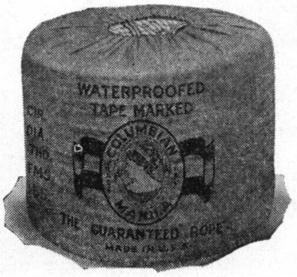
Practically pilfer-proof and immune to weather conditions.

	Each
No. 1AW—For wood signs, diam. reflector button. .768 in., drill required ⅞ in., depth of hole ¾ in., inside diameter of mounting .850 in.; wt. per 100 6 lbs.	$0.10

Open stock.

COLUMBIAN ROPE

GENUINE COLUMBIAN—PURE MANILA—RED WHITE AND BLUE—TAPE MARKED



Pure Manila Fibres: Assure a tougher rope that keeps its strength longer.

Exclusive Waterproofing: Protects against rot and decay, assures greater flexibility wet or dry. Will not freeze; easier handling in all kinds of weather.

Long Life Lubrication: Protects from unnecessary friction. Longer wearing for toughest jobs.

Tape Marked: Throughout entire length of one strand.

Three Strand

Diam., in.	¼	5/16	⅜	7/16	½	9/16
Add to base	$0.06	.06	.04	.02	.02	.02
Diam., in.	⅝	¾	⅞	1	1 1/16	1⅛
Add to base	$0.01	Base	Base	Base	Base	Base
Diam., in.	1¼	1 5/16	1½	1⅝	1¾	2
Add to base	Base	Base	Base	Base	Base	Base

Base price, per pound .... Market

RADIUM, JAVA SISAL

A beautiful white rope of Java Sisal fibre. Can be used to advantage where great strength of Manila fibre is not required. Waterproofed. Approximately 80% the strength of Columbian Manila Quality.

Three-Strand

Diam., in.	¼	5/16	⅜	7/16	½
Add to base	$0.04	.04	.03	.02	.02
Diam., in.	9/16	⅝	¾	⅞	1
Add to base	$0.02	.01	Base	Base	Base

Base price, per pound .... Market

APPROXIMATE WEIGHT AND STRENGTH OF THREE STRAND PURE MANILA ROPE

Diam. size, in.	Approx. gro. wts., lbs. Full coil 1200 ft.	Per foot	Length in one lb.	Strength in lbs. Break.	Work.
6th 3/16	***40** 18	.015	66′ 7″	450	90
6th ¼	***40** 24	.020	50′	600	120
9th 5/16	***55** 35	.029	34′ 6″	1,000	200
12th ⅜	***65** 49	.041	24′ 5″	1,350	230
15th	***80** 63	.0525	19′	1,750	330
18th 7/16	***80** 75	.0625	16′	2,250	450
21st ½	90	.0750	13′ 4″	2,650	530
9/16	125	.104	9′ 7″	3,450	690
⅝	160	.133	7′ 6″	4,400	880
¾	200	.167	6′	5,400	1,080
13/16	234	.195	5′ 2″	6,500	1,300
⅞	270	.225	4′ 5″	7,700	1,540
1	324	.270	3′ 9″	9,000	1,800
1 1/16	375	.313	3′ 2″	10,500	2,100
1⅛	432	.360	2′ 9″	12,000	2,400
1¼	502	.418	2′ 5″	13,500	2,700
1 5/16	576	.480	2′ 1″	15,000	3,000
1½	720	.600	1′ 8″	18,500	3,700
1⅝	893	.744	1′ 4″	22,500	4,500
1¾	1073	.895	1′ 1″	26,500	5,300
2	1290	1.08	11″	31,000	6,200

*The six smaller sizes are manufactured to weights approximately the same as the figures in bold face type, and a coil measures approximately as follows:

Rope, in.	3/16	¼	5/16	⅜	15 thd	7/16
Feet in coil	2600	2000	1900	1600	1500	1300

Note—Four strand rope weighs about 5% more than three strand and the tensile strength is about the same.

Sisal rope has a breaking strain equal to about 80% that of Manila. They weigh about the same.

TRANSMISSION ROPE

PURE MANILA—TAPE MARKED

To transmit power by means of a rope drive demands dependability, adaptability, flexibility, durability, economy, low initial cost and low upkeep. This rope supplies these qualities—plus.

Usually furnished 4-strand, in sizes ¾ to 2 in. diameter. 3-strand is used occasionally. In long coils; can be cut to any length.

LINEMEN'S ROPE

PURE MANILA

An easy handling rope engineered for safety and long wear. Its 4-strand construction reduces internal wear caused by friction of strand against strand as rope is bent over sharp edges or corners.

Dielectric Properties

To determine with what degree rope may be used with safety around high tension lines, a series of tests have been made by research engineers. These tests covered the conductivity of manila rope and its moisture absorption properties under known and carefully controlled conditions. Conclusions were that the waterproofing treatment, a regular feature of Linemen's rope, makes it, by virtue of its slow absorption of moisture much safer to use than non-waterproofed rope.

Furnished in ⅜, ½ and ¾ in. diameters, 4-strand, in full and half coils.

SKI-TOW ROPE

COLUMBIAN MANILA

Rope used for Ski-Tows must be able to withstand adverse operating conditions, especially winter weather. Columbian Ski-Tow minimizes twisting and turning—gives maximum wear and assures ease of handling. It has a special construction and lay, balanced by an extra hard foreturn that keeps "revolving in use" to a minimum.

Very fine yarn construction, proper lubrication, plus extra care in manufacture make this an ideal Ski-Tow rope. Winter snow, ice and thaw notwithstanding, this rope will give maximum wear at all times.

Usually 1 and 1⅛ in. diam., 3-strand; made to order in any length desired.

NYLON ROPE

COLUMBIAN

The Nylon filaments from which this rope is made have extra ordinary strength, fineness and elasticity, qualities that are found in the finished rope.

Nylon rope has a springlike action, stretching somewhat under strain and retracting to its approximate original length when strain is eased.

Nylon rope is permanently waterproofed, resistant to fungus growth, marine decay and vegetation.

Columbian Nylon is the superior Nylon rope because of the manufacturer's exclusive "Stabilization Process." "Stabilization" causes Columbian Nylon rope to hold its lay since it is in effect "Preforming."

WEIGHT AND STRENGTH OF COLUMBIAN NYLON ROPE

Diam., in.	Av. wt. 1200 ft. coil, lbs.	Av. break. strength filament nylon, lbs.	Av. ft. per lb.	Diam., in.	Av. wt. 1200 ft. coil, lbs.	Av. break. strength filament nylon, lbs.	Av. ft. per lb.
3/16	12	800	100	⅞	242	13500	5.0
¼	18	1200	66	1	334	18000	3.6
5/16	30	1950	40	1⅛	444	23500	2.7
⅜	42	2700	28.5	1¼	528	27000	2.3
7/16	60	3800	20	1 5/16	590	30000	2.0
½	73	4500	16.5	1½	745	38000	1.6
9/16	98	5900	12.2	1⅝	910	45000	1.3
⅝	124	7300	9.7	1¾	1100	54000	1.1
11/16	150	8600	8	2	1380	67000	.85
¾	177	10000	6.8	2⅛	1630	78000	.71
13/16	203	11300	5.9				

FINE POLISHED TWINES

For tying large and heavy bundles. Made of fine yarns, high grade quality and appearance, **selected fine India hemp.**

½ Pound Balls—3 Pounds Per Package

Size		Per pound
No. 18BB—2 ply	....	**$1.28**
No. 36BB—3 ply	....	**1.22**

COARSE POLISHED TWINES

FOR HEAVY BUNDLING—STRONG—UNIFORM

Made from **Yucatan (White India) Hemp**

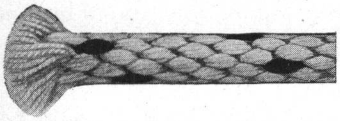
In 1 Pound Balls

Size		Per pound
Size No. 4½—2 ply	....	**$0.98**
Size No. 6 —3 ply	....	**.96**

Open stock.

SASH CORD

SAMSON SPOT



Solid Braided White Cotton

Made of extra quality stock carefully inspected and warranted free from imperfections of braid or finish. The colored spots are a trade mark used only with this cord. Guaranteed to give satisfactory service.

Size Nos.	**6**	**7**	**8**	**10**	**12**	**16**
Diameter, in.	$\frac{3}{16}$	$\frac{7}{32}$	¼	$\frac{5}{16}$	⅜	½
Av. ft. to lb.	66	55	44	27	20	9
Wt. package, lbs.	18	22	25	45	60	108
Per pound	$2.52	2.52	2.50	2.50	2.50	2.50

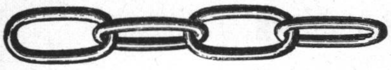
Size Nos. 6 to 12, 100 ft. in a hank, two connected, twelve hanks in a package; No. 16, 1200 ft. in a coil.

Per pound

No. 12 Special—Water-proofed, for use by Public Service and Municipal Power Companies; ½ in. diam.; wt. per coil 108 lbs. **$2.50**

1200 ft. in a coil; will cut to desired length.

WIRE COIL CHAIN

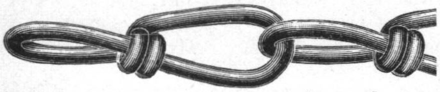


LIBERTY STRAIGHT LINK

Electric Welded, Bright Finish

Size, Nos.	Per 100 ft.	Size material, in.	Links per ft.	Wt. per 100 ft., lbs.
5/0	$16.00	8/32	8¼	47
6/0	19.50	9/32	8	61

75 feet on a reel.



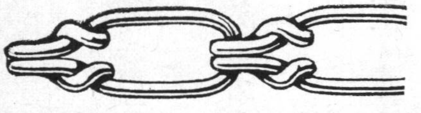
TENSO PATTERN

Weldless, Bright Finish

Size, Nos.	Per 100 ft.	Gauge Nos.	Tensile strength, lbs.	Wt. per 100 ft., lbs.
3	$4.20	14	475	6¾
1	4.55	12	775	10½
2/0	5.60	10	1200	16½
5/0	9.80	7	2000	28

125 feet on a reel.

LOCK LINK PATTERN



Weldless, Bright Finish

For many general uses. Lies flat, is smooth, flexible and permits many adjustments. Many general uses, light conveyors, rolling shutters, folding doors.

Size, Nos.	Per 100 ft.	Gauge Nos.	Tensile strength, lbs.	Wt. per 100 ft., lbs.
1/0	$6.35	11	1055	17
2/0	7.00	10	1545	22
3/0	8.80	9	1753	25

125 feet on a reel.

ALLOY STEEL CHAIN

HERC-ALLOY HEAT TREATED

Inswell Patented Electric Weld Process

Herc-Alloy Steel Chain is the **Strongest Chain Made,** being an alloy of nickel and moly. Generally one size smaller Herc-Alloy can be used in place of standard steel chain.

Herc-Alloy is heat-treated and unlike ordinary chain, should never be annealed.

It is made with short narrow links, reducing the danger of bending or gouging when used around sharp corners.

Average Tensile Strength Per Square Inch of Material

Herc-Alloy Steel Chain—125,000 lbs. after heat treatment.

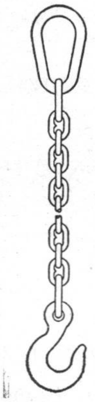
High Carbon Steel Chain— 85,000 lbs.

Low Carbon Steel Chain—55,000 lbs.

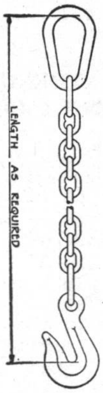
Size, in.	Per 100 lbs.	Inside length link, in.	Inside width link, in.	Approx. links per foot	Average wt. per 100 ft., lbs.	Actual proof test, lbs.	Safe working load, lbs.
$\frac{9}{32}$	$95.00	.735	.375	16⅓	80	5500	2750
⅜	73.48	1.012	.500	11⅞	132	13200	6600
½	52.54	1.402	.687	8½	236	22500	11250
⅝	47.69	1.547	.812	7¾	390	33000	16500
¾	42.26	2.00	.968	6	556	46000	23000
⅞	43.45	2.125	1.093	5⅔	794	57500	28750

ALLOY STEEL CHAIN SLINGS

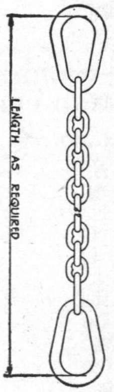
HERC-ALLOY



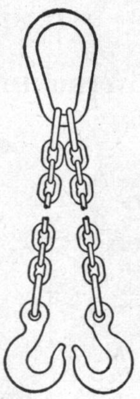
Type S with Slip Hook



Type S with Grab Hook



Type C with Pear Shaped End Links



Type D Double Branch with Slip Hooks

Recommended Safe Working Loads

Size, in.	Types S and C, on straight lift, lbs.	Double branch Type D used at angles of: 60°, lbs.	45°, lbs.	30°, lbs.
$\frac{9}{32}$	2,750	4,763	3,889	2,750
⅜	6,000	11,431	9,332	6,600
½	11,250	19,485	15,908	11,250
⅝	16,500	28,578	23,331	16,500
¾	23,000	39,836	32,522	23,000
⅞	28,750	49,795	40,653	28,750

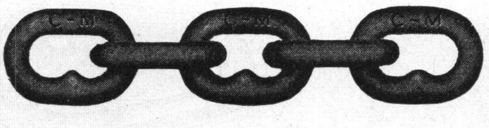
For safe working loads on Triple branch Type T sling chains add 50% to above figures on Type D.

For safe working loads on Quad branch Type Q sling chains add 100% to above figures on Type D.

Prices on Request

STEEL COIL CHAIN

PROOF GRADE, SELF-COLORED

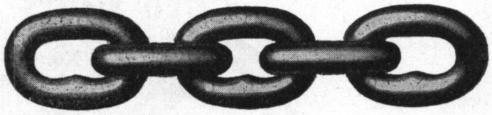


Steel chain electric welded. Tested to loads shown below. Safe-working load one-half of proof test. Average breaking strain double the proof test.

Size, in.	Per 100 lbs.	Size material, in.	Links per ft.	Wt. 100 ft., lbs.	Proof test, lbs.
3/16	$32.00	7/32	12½	40	1,045
¼	30.80	9/32	12	70	1,800
5/16	30.20	11/32	10¾	105	2.720
⅜	30.00	13/32	9¾	158	3,720
7/16	29.60	15/32	8¾	210	5,000
½	29.20	17/32	8	265	6,600
⅝	28.80	21/32	6⅜	410	10,000
¾	28.70	25/32	5⅝	580	14,150
* ⅞	28.50	29/32	4¾	780	19,200
*1	28.30	1 1/32	4⅜	1000	24,800

*These sizes furnished fire-welded only.

B. B. B. GRADE—SELF COLORED



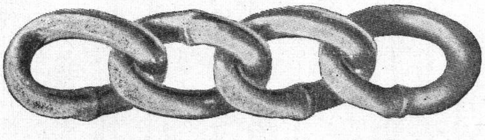
Closer link than Proof Grade. Recommended where great strength and durability are required.

Size, in.	Per 100 lbs.	Size material, in.	Links per ft.	Wt. 100 ft., lbs.	Proof test, lbs.
3/16	$35.20	7/32	14	42	1,155
¼	34.00	9/32	13¼	75	2,025
5/16	33.40	11/32	11¾	112	3,050
⅜	33.20	13/32	10½	162	4,175
½	32.40	17/32	8½	285	7,425
⅝	32.00	21/32	6¾	425	11,250
¾	31.90	25/32	6	605	15,900
⅞	31.70	29/32	5	815	21,600
1	31.50	1 1/32	4½	1030	27,900

Open stock.

MACHINE CHAIN

LIBERTY TWIST LINK



Electric Welded, Bright Finish

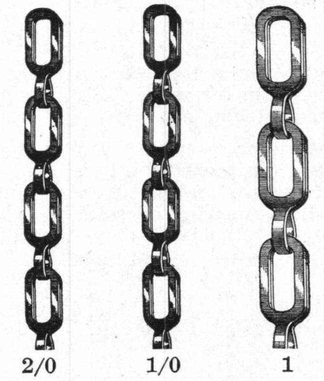
Size, Nos.	Per 100 ft.	Size material, in.	Links per ft.	Tensile strgth., lbs.	Wt. 100 ft., lbs.
2/0	$15.00	3/16	16½	1510	34
3/0	16.00	13/64	15	1760	40
5/0	23.00	¼	14	2660	64
6/0	28.00	9/32	13	3420	78

Size Nos. 2/0 and 3/0, 100 feet; Size Nos. 5/0 and 6/0, 50 feet in a carton.

Your Inquiries for Chain for Any
Special Purposes
Will Receive Our Careful Consideration

SAFETY CHAIN

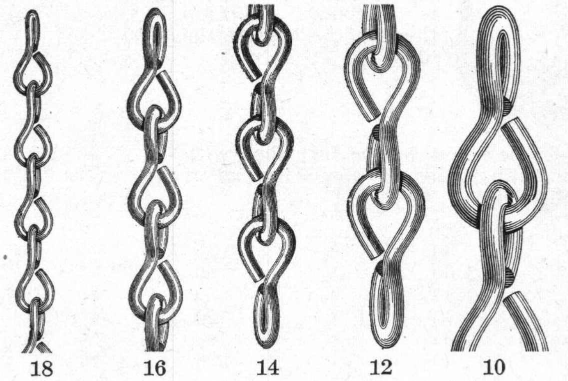
SHEET METAL, CUT LINKS



Size, Nos.	Steel Furnace Links Per 100 ft.	Steel Furnace Links Wt. per 100 ft., lbs.	Brass Safety Chain Per 100 ft.	Brass Safety Chain Wt. per 100 ft., lbs.	Gauge, in.
2/0	$4.60	1¼	$5.75	1½	.018
1/0	5.40	1¾	7.20	2	.023
1	6.10	3½	9.00	4	.028

200 feet on a reel.

SINGLE JACK CHAIN

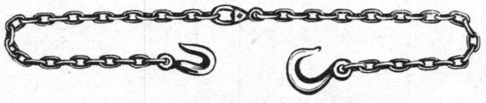


Size, Nos.	Bright Steel Per 100 ft.	Bright Steel Wt. per 100 ft., lbs.	Brass Per 100 ft.	Brass Wt. per 100 ft., lbs.
18	$2.35	1¾	$3.60	1⅞
16	2.55	3	5.05	3⅛
14	2.95	4¾	7.95	5⅛
12	3.45	8⅝	11.50	9¼

200 feet on a reel.

LOG OR BINDING CHAINS

"INSWELL"



No. 120—Self-Colored

Proof coil chain; fitted with grab hook on one end, swivel in center, slip hook on other end.

14 Feet Long

Size, in.	5/16	⅜	½	⅝
Size material, in.	11/32	13/32	17/32	21/32
Wt. each, lbs.	16	23	41	62
Each	$6.28	8.98	15.66	17.96

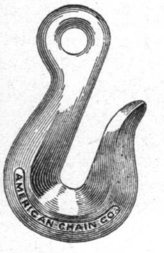
16 Feet Long

Size, in.	5/16	⅜	½	⅝
Size material, in.	11/32	13/32	17/32	21/32
Wt. each, lbs.	18	26	47	70
Each	$8.98	10.14	17.96	26.46

Open stock.

CHAIN HOOKS

GRAB


AMERICAN CHAIN CO.

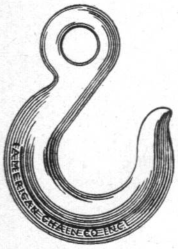
Drop Forged Steel, Self-Colored

So shaped that it will grab over a link of the size chain for which it is intended and not slip.

Note—These hooks can be furnished with Laughlin round pin clevis instead of solid eye.

Size, in.	Per 100	ID eye, in.	Wt. per 100, lbs.
¼	$ 17.60	⅜	26
5/16	22.00	½	50
⅜	30.80	⅝	80
7/16	40.70	¾	130
½	55.00	⅞	160
⅝	103.40	1	355
¾	158.40	1⅛	685
⅞	457.60	1¼	1190
1	739.20	1⅜	1940

SLIP


AMERICAN CHAIN CO. INC.

Drop Forged Steel, Self-Colored

So shaped that chain of the size for which it is intended will slip through the bow of the hook.

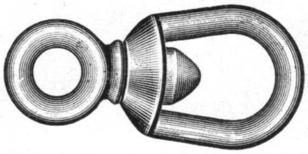
Note—These hooks can be furnished with Laughlin round pin clevis instead of solid eye.

Size, in.	Per 100	ID eye, in.	Wt. per 100, lbs.
¼	$ 17.60	7/16	35
5/16	22.00	½	50
⅜	30.80	⅝	80
7/16	40.70	¾	120
½	55.00	⅞	165
⅝	103.40	1	290
¾	158.40	1⅛	450
⅞	457.60	1¼	865
1	739.20	1¾	1350

All above, open stock.

CHAIN SWIVELS

DROP FORGED STEEL

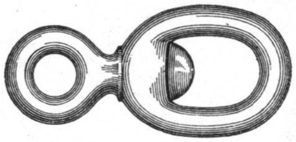


No. S-401—Self-Colored

Size, in.	Each	ID eye, in.	Lgth. over all, in.	Wt. each, lbs.
⅜	$1.25	¾	4⅛	½
½	1.85	⅞	5	1
⅝	3.00	1 1/16	6¼	1¾
¾	4.10	1¼	7⅛	2⅞
1	6.80	2	10	6¾

Open stock.

MALLEABLE IRON



Self-Colored

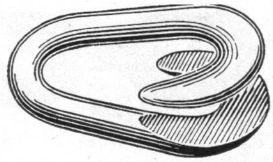
Free acting; designed to have the same strength as a corresponding chain link.

Size, in.	Each	ID of eye, in.	Lgth. over all, in.	Wt. per 100, lbs.
¼	$0.23	7/16	2 3/16	21
5/16	.27	7/16	2½	32
⅜	.37	½	3⅜	61
½	.65	13/16	3⅝	93

Open stock.

CHAIN REPAIR LAP LINKS

OPEN END



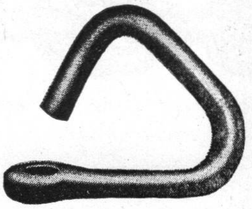
Wrought Steel, Bright

Laps are long and tapering, making a smooth assembly. Can be closed cold or heated for welding.

Trade size, in.	Per gross	Inside lgth., in.	Inside width, in.	Wt. gro., lbs.
3/16x1	$ 3.75	½	1	5
10-3 (7/32)	3.75	½	1¼	8
10-2 (¼)	4.10	½	1¼	11
10-1 (9/32)	4.55	½	1¼	14
5/16x1½	7.20	¾	1½	21
¼x2	6.60	⅝	2	15
5/16x2	8.25	¾	2	25
⅜x2	11.35	¾	2	34
½x2½	19.80	1	2½	74

Open stock.

COLD SHUTS



No. 1—Without Shoulder

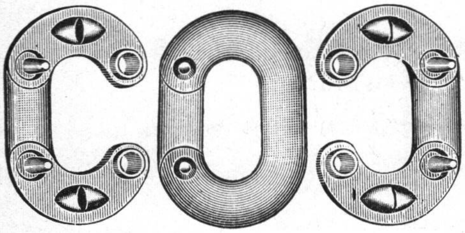
Wrought steel; self-colored.

Size, in.	Per 100	Inside, in.	Wt. per 100, lbs.
¼	$ 8.25	1⅛x7/16	6½
5/16	8.80	1¼x½	11
⅜	9.80	1⅜x⅝	18
7/16	11.00	1½x11/16	26
½	14.30	1⅝x¾	42
⅝	23.65	2 x⅞	78

Open stock.

CHAIN CONNECTING LINKS

MISSING LINK



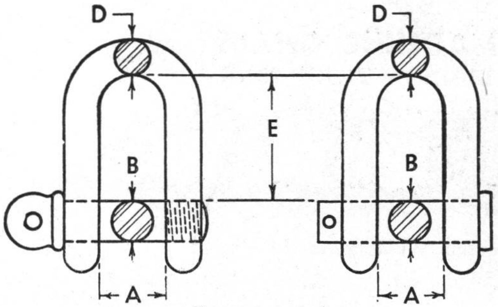
No. S-335—Drop Forged Steel, Self-Colored

For joining and repairing all kinds of chain.

Size, in.	Per dozen	Over all, in.	U.S. Gov. test, tons	Ult. proof chain, tons	Wt. doz., lbs.
3/16	$ 1.81	1 3/16x 25/32	1.2	1.1	⅜
¼	1.81	1½x1	2.8	1.8	¾
5/16	1.88	1 11/16x1 5/32	4.2	2.2	1
⅜	2.60	2 1/16x1⅜	5.6	3.7	2
7/16	3.14	2 11/32x1 17/32	7.	5.	3⅛
½	3.47	2 21/32x1 23/32	8.	6.6	4½
⅝	5.58	3 5/16x2 3/32	11.5	12	9
¾	7.84	3⅞x2 7/16	17.	19.2	14¼
⅞	10.69	4½x2 15/16	19.2	24.2	20¼
1	17.42	5 x3⅜	26.5	31.2	29

3/16 in., two dozen; ¼ to ¾ in., one dozen in a package; balance, open stock.

CHAIN SHACKLES



Drop Forged Steel

With screw pin or round pin.

Recommended safe working loads have been selected with a safety factor of 5 to 1 based on the breaking strength. For general practice working loads should not exceed figures shown.

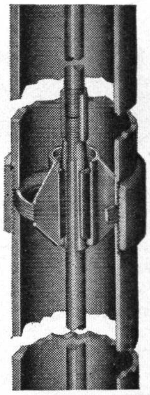
Size "D," in.	Black, each	Galv., each	Recommended safe working load, lbs.	A, in.	B, in.	E, in.	Tolerance A	Tolerance E	Wt. each, lbs.
¼	$0.38	$0.40	725	15/32	5/16	...	1/32	1/16	.12
5/16	.44	.47	1050	17/32	⅜	...	1/32	1/16	.20
⅜	.50	.52	1600	21/32	7/16	1¼	1/32	1/16	.35
½	.74	.80	2825	13/16	⅝	1 11/16	1/16	1/16	.70
⅝	1.08	1.20	4425	1 1/16	¾	2	1/16	⅛	1.3
¾	1.60	1.72	6375	1¼	⅞	2 5/16	1/16	¼	2.0
⅞	2.00	2.26	8650	1 7/16	1	2⅞	1/16	¼	3.7
1	2.80	3.20	11300	1 11/16	1⅛	3¼	1/16	¼	5.4
1⅛	4.06	4.64	13350	1 13/16	1¼	3½	1/16	¼	7.2
1¼	5.10	5.80	16500	2	1⅜	3 11/16	1/16	¼	10.3
1⅜	6.42	7.26	20000	2¼	1½	4½	⅛	¼	11.6
1½	8.40	9.44	23750	2⅜	1⅝	5	⅛	¼	16.3
1¾	11.60	13.30	32350	2⅞	2	5⅛	⅛	¼	27.8
2	17.30	20.00	42500	3¼	2¼	6¾	⅛	¼	38.5

Open stock

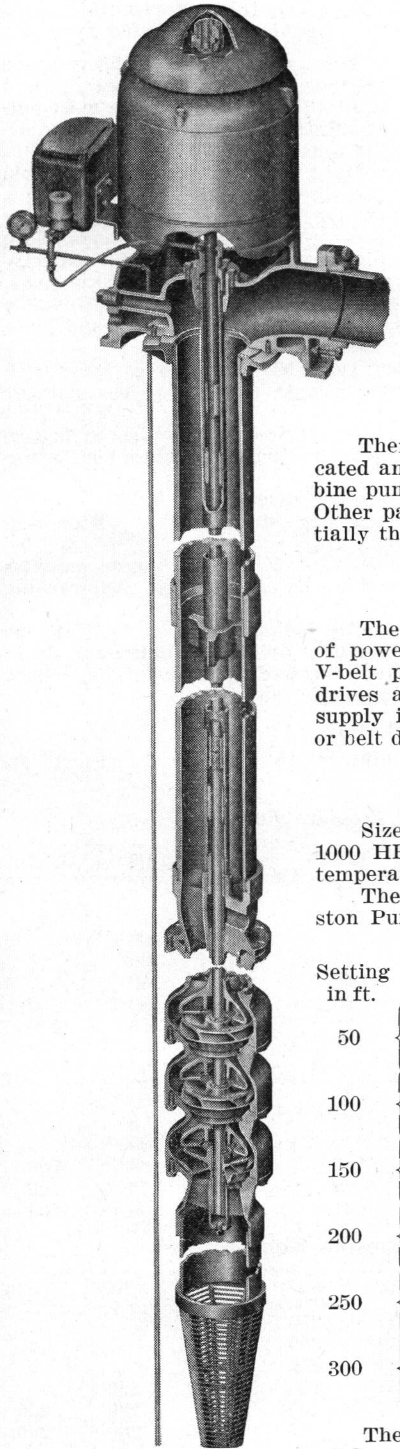
TURBINE PUMPS

JOHNSTON VERTICAL

Every Johnston Pump is engineered for the specific duty for which it is intended. Therefore, only a general description of type, size and characteristics can be included here. However, our hydraulic engineers are available to furnish detailed information, proposals or anything else necessary to meet your particular pumping equipment needs.



Water-lubricated column section.



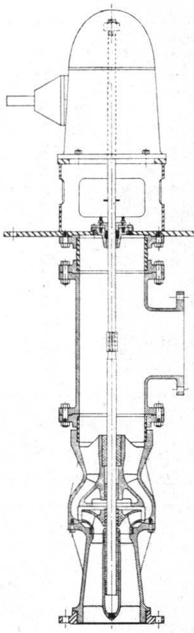
Cross section oil-lubricated pump.

Applications

Johnston Vertical Pumps are made for a wide variety of uses in agricultural, industrial and municipal service. They are designed for primary water supply from wells, lakes and rivers—for domestic water systems—for mine dewatering—for cooling towers, condenser pumping, booster pumps, transfer pumps, circulation pumps, sump pumps—handling water, volatile fluids, liquids near the boiling point, and many other fluids, such as sulphite liquor, sulphuric acid, chlorine, brine, salt water and other caustic liquids.

Types of Equipment

There are two general types of Johnston Vertical Turbine Pumps, oil-lubricated and water-lubricated. The difference between oil- and water-lubricated turbine pumps lies in the construction of the lineshaft bearings and column assembly. Other parts of the pump, the discharge head and the pumping element, are essentially the same. Both types are made in close-coupled or deep-well units.



Typical of special duty Johnston Pumps engineered for industrial service is the one illustrated above. It is a close-coupled unit designed for pipe-line booster service. Johnston Pumps are ideally suited for industrial applications because of their non-overloading characteristics, simplicity of construction, compactness, ease of installation, elimination of priming, low starting torque, capacity adjustment features and minimum maintenance cost.

Adaptable to Any Power Source

The Johnston Vertical Turbine Pump is furnished for use with any type of power. Integral electric motor drives, right angle gear drives, and flat or V-belt pulleys may be used on the same discharge head. Either belt or gear drives are ideal for gasoline, diesel, or gas engines. When a continuous water supply is essential, a combination of an electric motor with either a right gear or belt drive will give positive insurance against power failure.

Range of Sizes

Sizes range from 4 to 32 inches; either single or multi-stage; from 2 to 1000 HP; capacities from 25 to 10,000 GPM; for heads to 1000 feet; for liquid temperatures to 400° F.

The table below shows a few of the more common conditions for which Johnston Pumps are ideally suited.

Setting in ft.		Capacity in GPM					
		100	250	500	750	1000	1500
50	**HP**	**2**	**5**	**10**	**15**	**20**	**25**
	Pump size, in.	**6**	**8**	**10**	**12**	**12**	**12**
	Each	$ 677.00	761.00	1050.00	1220.00	1473.00	1683.00
100	**HP**	**5**	**7½**	**15**	**25**	**30**	**50**
	Pump size, in.	**6**	**8**	**10**	**12**	**12**	**12**
	Each	$1010.00	1136.00	1450.00	1680.00	2100.00	2860.00
150	**HP**	**7½**	**15**	**25**	**40**	**50**	**75**
	Pump size, in.	**6**	**8**	**10**	**12**	**12**	**12**
	Each	$1365.00	1495.00	1765.00	2100.00	2530.00	3345.00
200	**HP**	**7½**	**20**	**40**	**50**	**60**	**100**
	Pump size, in.	**6**	**8**	**10**	**12**	**12**	**12**
	Each	$1655.00	1800.00	2325.00	2635.00	2985.00	4985.00
250	**HP**	**10**	**20**	**40**	**60**	**75**	**125**
	Pump size, in.	**6**	**8**	**10**	**12**	**12**	**12**
	Each	$2065.00	2130.00	2660.00	3290.00	3745.00	6430.00
300	**HP**	**15**	**25**	**50**	**75**	**100**	**150**
	Pump size, in.	**6**	**8**	**10**	**12**	**12**	**12**
	Each	$2650.00	3166.00	3485.00	3965.00	5500.00	7950.00

The calculations in this tabulation are intended only to give a general idea of horsepower, well or pump size and an approximate price. Prices subject to change without notice.

FOR QUOTING

Advise us inside diameter of well, capacity, depth to water below ground level while pumping, and height and horizontal distance above ground level to point of discharge.

JOHNSTON JUNIOR

Settings, ft.	10 to 250
Min. well diam., ID, in.	6
Horsepower ratings	3, 5, 7½
Capacity range, GPM	15 to 150

Operates at 1760 RPM

JOHNSTON LITTLE BEAVER

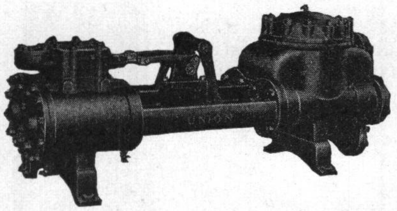
Lift, ft.	10 to 200
Min. well diam., ID, in.	4
Horsepower ratings	2, 3, 5
Capacity range, GPM	15 to 150

Electric motor or V-belt drive.
Operates at 3450 RPM

Complete Specifications, Ratings and Prices on Request

STEAM PUMPS

UNION DUPLEX



General Service

Steam end extra heavy with heavy bolting, suitable for 250 lbs. steam pressure.

Steam openings 250 lbs. ASME standard, exhaust 125 lbs. ASME standard.

Steam end provided with special port openings reducing clearance and improving the economy. Steam end suitable for use with superheated steam on account of reduced size of steam valves.

Deep stuffing boxes with bolted glands suitable for six rings of packing on piston and valve rod stuffing boxes.

Extra large piston rods. Two-piece construction with steel coupling on 7½x10 in. cylinders and larger.

Side-bar yoke construction insures a uniform distribution of load between cylinders and accessibility to stuffing boxes.

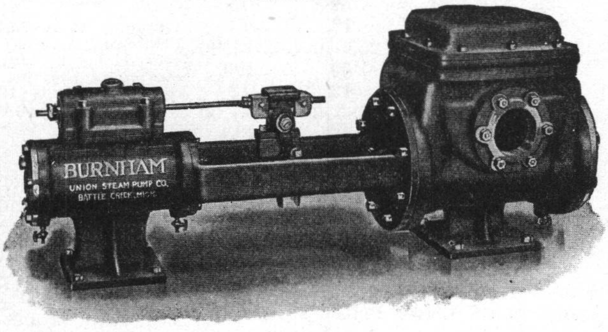
Fluid cylinders are extra heavy with heavy bolting, suitable for 300 lbs. maximum working pressure. Heavy hard bronze cast liners insure long life; removable bolt type furnished on most sizes. Fluid cylinder flanges 250 lbs. ASME standard on discharge, 125 lbs. standard on suction.

Size										
Diam. steam cyl., in.		Diam. fluid cyl., in.		Lgth. stroke, in.	Each	Gals. per stroke each cyl.	Max. stroke each cyl., per min.	Cap. GPM both cyl., max. speed	HP boilers pump will feed at slow speed	App. ship. wt. each, lbs.
3	x	2	x	3	$130.00	.041	160	13.1	80	150
4½	x	2¾	x	4	178.00	.103	150	30	180	360
5¼	x	3½	x	5	240.00	.208	140	58	325	575
6	x	4	x	6	281.00	.326	130	84	460	725
7½	x	5	x	6	472.00	.510	130	133	725	1150
7½	x	5	x	8	521.00	.679	110	149	925	1250
7½	x	4½	x	10	525.00	.689	96	132	850	1175
7½	x	5	x	10	532.00	.849	96	163	1050	1350
9	x	5¼	x	10	637.00	.938	96	180	1175	1575
10	x	6	x	10	747.00	1.224	96	235	1515	1950
10	x	6	x	12	786.00	1.46	90	265	1575	2050
10	x	7	x	10	847.00	1.66	96	318	2050	2200
10	x	7	x	12	866.00	2.00	90	360	2100	2250

In addition to **General Service Pumps** we Have Also a Complete Line of **High Pressure Piston** and **Plunger Pumps** for Steam, Electric Motor or Belt Drive.

WET VACUUM PUMPS

BURNHAM



Standard Pattern, Cast Yoke

Maximum steam pressure 200 lbs.

For heating systems and general vacuum service up to 20 in. vacuum. For use where only moderate quantities of water are handled and where water is discharged not over 100 ft. above pump.

For High Vacuum

These pumps are equipped with lantern-gland type water-sealed stuffing box on vacuum cylinder. They are for use on surface condensers, vacuum pans (dry system), and general vacuum service up to 26 in. vacuum, where only moderate quantities of water are to be handled, and where water is discharged not over 100 ft. above pump.

POWER PUMPS

GOULDS

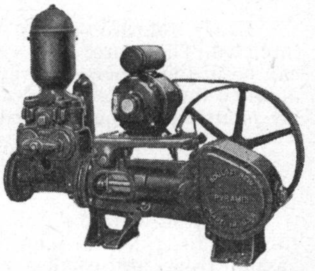


Fig. 1813—Horizontal, Double-Acting, Piston Type

This group of pumps incorporates all the latest features of design and are, without question, the most outstanding piston pumps on the market today.

Built in four sizes, for medium pressures, Figure 1813 provides a capacity range of 7 to 58 GPM for pressures up to 100 pounds. Two high pressure units provide capacity range from 6 to 20 GPM against pressures up to 250 pounds. Though regularly furnished for motor drive with an adjustable top motor mounting, pumps can be supplied with tight and loose pulleys, or single tight pulley for belt drive.

Large cast iron air chamber. One piece cast iron cylinder with brass cylinder lining and two separate and removable cylinder heads.

Valves—For hot or cold water service, rubber disc on bronze grid seats with bronze stem and valve plate and phosphor bronze springs.

For fuel oil, gasoline, etc., micarta disc type.

Piston equipped with cup leathers. Stainless steel piston rod. Stuffing box readily accessible.

One-piece cast iron power end forms base of pump, encloses gears, crosshead and guides, and forms oil reservoir. All working parts automatically lubricated.

Adjustable motor mounting has slotted type motor rails to permit mounting of any motor without drilling. Priming and drain connections conveniently located. Screwed opening for ball check air valve to adapt pump to pneumatic tank service.

Ratings

All ratings based on handling clear, cold water with 15 ft. maximum suction lift.

Medium Pressure Sizes

		Motor rating				
Size, in.	Capacity, GPM	⅓ HP	½ HP	¾ HP	1 HP	1½ HP
		Pressure, lbs.				
2½x3	7	43	75	100	...	...
	9	35	65	100	...	...
	10	25	60	90	100	...
	12.5	..	43	75	100	...
3 x4¼	12.5	..	28	63	100	...
	15	..	23	52	80	100
	17.5	..	20	45	70	100

		Motor rating				
Size, in.	Capacity, GPM	1 HP	1½ HP	2 HP	3 HP	5 HP
		Pressure, lbs.				
4 x5	26.5	35	70	90	100	...
	32	30	50	75	100	...
	37	22	43	65	100	...
5 x5	41	..	35	43	80	100
	50	..	28	37	70	100
	58	..	24	30	60	100

High Pressure Sizes

		Motor rating					
Size, in.	Capacity, GPM	¾ HP	1 HP	1½ HP	2 HP	3 HP	5 HP
		Pressure, lbs.					
2x4¼	6.3	130	200	250	...	...	...
	7.3	110	170	250	...	...	...
	8.3	90	150	250	...	...	...
3x5	14.4	...	65	120	175	250	...
	17.3	...	55	100	150	235	250
	20.2	...	45	87	128	200	250

Note—When working under pressure capacities will be reduced 5 to 10% because of slippage.

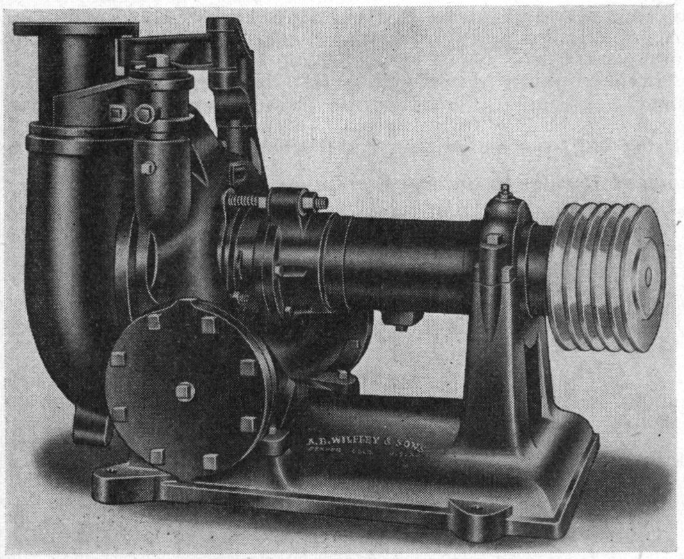
Complete with Motor Bracket and V-Belt Drive; Less Motor

Size, in.					
Diam.	x	Stroke	Each	Pipe conn., in.	Net wt. each, lbs.
2½	x	3	$137.00	1¼	175
3	x	4¼	192.00	1½	275
4	x	5	300.00	2	475
5	x	5	380.00	2½	500
2	x	4¼	192.00	1¼	300
3	x	5	306.00	1½	525

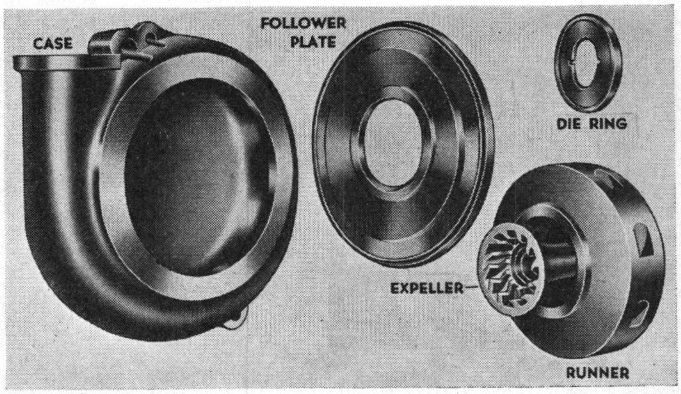
Note—Larger size Power Pumps, Duplex and Triplex Types, are available. Tell us your pumping requirements and our engineers will recommend the proper equipment.

CENTRIFUGAL SAND PUMPS

WILFLEY MODEL "K"



Belt Driven Pump



Wearing Parts

Higher Efficiencies—Improved Discharge Keeper—Better Bearing Protection

Two-Piece Frame Construction—Redesigned Check Valve

The patented Wilfley Model "K" sand pumps embody the original Wilfley principles in addition to important improvements. The Model "K" pumps are designed for high efficiency, trouble-free operation. The two-piece frame construction makes the use of special alloys and rubber lining both economical and practical. The new check valve design features no leakage, long life, and maximum bearing protection.

Model "K" sand pumps are available direct connected, belt driven, and overhead V-belt driven in the following sizes: 1, 1½, 2, 2½, 3, 4, 5, 6, and 8 in. discharge. The pumping parts are designed for long life and easy replacement. The standard parts are made of special alloy iron which is extremely hard and remarkably uniform and clean throughout. Rubber wear parts are available and are interchangeable with the metal parts.

Wetted pump parts can be changed in a few minutes without disturbing the intake or discharge piping.

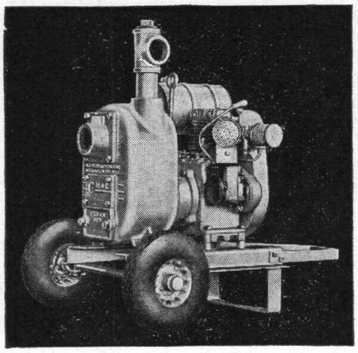
Maximum efficiency can be maintained throughout the life of the wetted pump parts by a simple outside adjustment that can be made while the pump is in operation.

Size pump, in.	Pipe connections, in.		Maximum capacities								Max. size particle recommended	Pump complete with standard pulley for belt drive	Pump complete mounted on a sub-base with coupling for direct connection to electric motor
			Percentage or solids by weight										
			5%		25%		50%		65%				
	Disch.	Intake	GPM	Min. intake head, ft.	GPM	Min. intake head, ft.	GPM	Min. intake head, ft.	GPM	Min. intake head, ft.		Approx. ship. wt., lbs.	Approx. ship. wt., lbs.
1	1	2	45	3	35	3	25	3½	20	3½	¼	475	690
1½	1½	2½	90	3	70	3	60	3½	45	3½	⅜	500	720
2	2	4	175	3	145	3	110	3½	100	4	½	715	1090
2½	2½	4	225	3	200	3	175	3½	150	4	½	740	1115
3	3	5	300	3	250	3	200	3½	190	4	½	950	1350
4	4	6	550	3½	450	3½	350	3½	325	4	¾	1730	2275
5	5	8	900	3	750	3	600	3½	500	4	1	2180	2860
6	6	10	1400	5	1000	5	750	5	600	5	1	2650	3450
8	8	12	3000	3	2500	3	1800	3	1500	3½	1	3950	5650
3CA	3	5	250	3½	225	3½	190	3½	160	4	½	1050	1530
4CA	4	6	550	3½	450	3½	350	3½	325	4	½	1700	2150

Prices on Request

CONTRACTORS' CENTRIFUGAL PUMPS

C. H. & E. SELF-PRIMING MODEL 7M



A compact, complete all-purpose pump which can be used for a wide variety of pumping applications. It will handle the small job completely and can be used as an auxiliary or standby unit on large jobs. Easily moved by one man and very compact for restricted places. This small unit is well adapted for constant heavy duty work.

Has 2 in. suction and discharge and is powered by a full 2½ HP single cylinder air cooled engine with outside high tension magneto and impulse coupling, air cleaner and gravity feed carburetor.

Standard equipment includes lifting bail, suction strainer and discharge fitting.

A.G.C. Standard Ratings in Gallons Per Minute

Total head including friction, ft.	Height of pump above water			
	10 ft.	15 ft.	20 ft.	25 ft.
25	115	100	85	..
30	110	95	83	65
40	95	85	77	60
50	60	58	55	48
60	5	5	5	5

Each

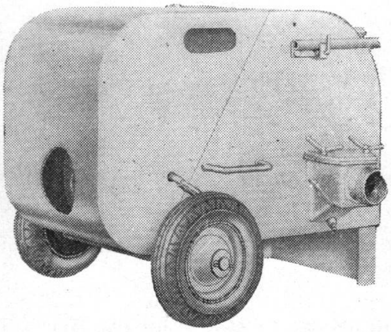
No. 41DB—On 2-wheel truck with 10 in. rubber tired wheels; net wt. each 200 lbs. $215.00

Note—Other sizes available from 1½ in. Fly Wate to 8 in. Heavy Duty Pumps. Prices on request.

Open stock.

CONTRACTORS' DIAPHRAGM PUMPS

C. H. & E. TWO INCH



The diaphragm pump has always been recognized as the most satisfactory type pump to handle water containing heavy solids and stringy material, and to dewater slow seepage from excavations.

The No. 52AN combines diaphragm pump advantages with light weight and compactness. It can easily be handled by two men when loading and unloading from truck.

The pump waterbox, frame and jackshaft support are combined in a one piece welded steel section with great strength and resistance to shock.

The pump shaft and crank pin run in roller bearings. Pump shaft is hardened, heat treated and precision ground.

Valves are of the free opening, rubber faced swing type with ample water openings. Valves are arranged for straight line waterflow.

Diaphragm is clamped firmly between steel plates at both inner and outer edges, and can be easily replaced.

Both suction and discharge connections are arranged for optional use of 2 in. or 2½ in. hose. Connections are tapped 2 in. inside and threaded 2½ in. outside. A cleanout equipped with easily removable hand screws provides access to discharge valve and water passage.

Power is transmitted through enclosed gears, requiring no adjustments.

Unit is enclosed in a metal housing which provides weather protection. Hinged covers at both ends provide complete accessibility to pump and engine. Convenient handles for lifting and loading are provided at both sides and front of machine.

Standard pump is furnished on two rubber tired wheels. Skid mounting optional.

Capacity

Lift, ft.	5	10	20
Gals. per hour	3000	2500	1250

25 ft. max. suction lift, 25 ft. max. discharge head. 1½ HP single cylinder air cooled engine.

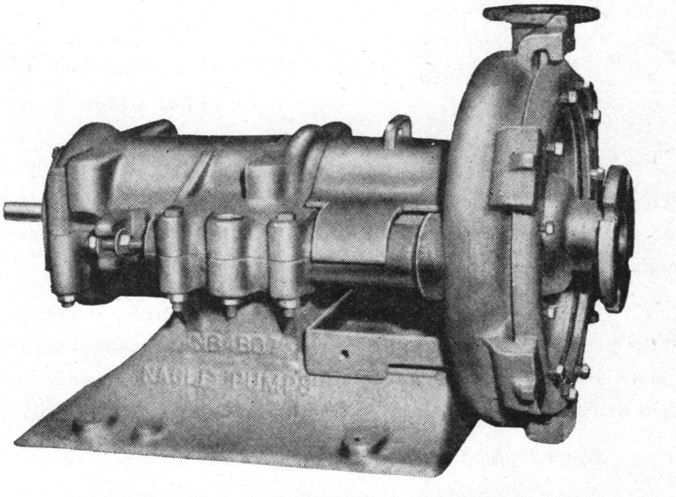
Each

No. 52AN—On 2-wheel truck with 10x2.75 in. rubber tires; net wt. each 185 lbs. $195.00

Open stock.

INDUSTRIAL CENTRIFUGAL PUMPS

NAGLE TYPE "T," ABRASIVE LIQUID



Horizontal Shaft, Single Stage, Side Suction

A convenient single stage side suction pump. Made in sizes from ¾ to 8 in. for heads under same operating conditions up to 250 ft., and for capacities in the range of 2000 GPM.

Applications

Intended for handling abrasive mixtures and corrosive liquids and slurries. Can be stationed either above or below sump liquid level.

Design Features

Built for operation in the most abusive services and have the necessary qualities inbuilt to fully meet the requirements of high mechanical and hydraulic efficiency. Simple design; rugged construction.

The patented tubular, overhanging, clamp-bolt assembly makes possible easy removal, replacement and adjustment of the parts subject to service abuse.

Nagle pumps may be had with any of several different types of impellers.

Depending on the type of service involved type "T" pumps can be fitted with wearing parts of whatever material best suits the application.

Complete Description, Specifications and Prices on Request

HYDRAULIC DATA

DEFINITIONS

Suction Lift

Water source below pump—Vertical distance in feet between pump centerline and water surface plus water friction in pipe.

Suction Head

Water source above pump—Vertical distance in feet between pump centerline and water surface minus water friction in pipe.

Discharge Head

Vertical distance in feet between pump centerline and point of free discharge or water level plus water friction in pipe.

Total Head

Water source below pump—Discharge head plus suction lift or water source above pump—Discharge head minus suction head.

Capacity

Water flow rate in gallons per minute (GPM).

UNIT CONVERSION FACTORS

Pressure and Head

1 Lb. per sq. in. = 2.31 Ft. of Water or 2.04 In. of Mercury
1 Ft. of Water = .433 Lbs. per sq. in. or .882 In. of Mercury
1 In. of Mercury = .491 Lbs. per sq. in. or 1.134 Ft. of Water

Volume and Weight

1 Gallon = .1337 Cubic Feet or 8.35 Pounds
1 Cubic Foot = 7.48 Gallons or 62.4 Pounds
1 Pound = .120 Gallons or .016 Cubic Feet

Flow

1 Gallon per minute (GPM) = .00144 MGD or .00223 CFS
1 Million Gallons per Day (MGD) = 694.5 GPM or 1.547 CFS
1 Cubic Foot per Second (CFS) = 448.8 GPM or .646 MGD
1 Acre Inch in 12 Hours Pumping = 37.7 GPM

Power

1 Boiler Horsepower = .069 GPM
1 Horsepower = .746 Kilowatts or 33,000 Ft.-Lbs. per Minute
1 Kilowatt = 1.34 Horsepower or 44,250 Ft.-Lbs. per Minute

MISCELLANEOUS DATA

Altitude

Practical Suction Lift for 60° F. Water is 22 Feet at Sea Level. For Elevations above Sea Level Deduct 1 Foot for each 1000 Ft. Elevation.

Temperature

Practical Suction Lift for 120° F. Water is 10 Feet at Sea Level. For Elevations above Sea Level Deduct 1 Foot for each 1000 Ft. Elevation plus 2½ Ft. for each 10° F. increase in Temperature.

Power

$$\text{Water Horsepower} = \frac{\text{GPMxHead in Feet}}{3960} \qquad \text{Brake Horsepower} = \frac{\text{Water Horsepower}}{\text{Pump Efficiency}}$$

Centrifugal Pumps

Capacity varies directly as the speed or impeller diameter
Head varies as the square of the speed or impeller diameter
Power varies as the cube of the speed or impeller diameter

WATER FRICTION IN 100 FEET OF PIPE

Pipe friction loss for all clear liquids having same viscosity as water. This table is based on Williams and Hazen Formula for 15 Year old iron pipe. For new pipe reduce friction values 30%, for 25 Year old pipe increase values 20%.

Flow rate, GPM	Nominal pipe diameter							Flow rate, GPM
	½ in.	¾ in.	1 in.	1¼ in.	1½ in.	2 in.	2½ in.	
	Loss of head in feet due to friction, per 100 ft. of 15 yr. old pipe							
3	15.8	4.1	1.26	......	......	......	......	3
5	41.0	10.5	3.25	0.84	0.40	......	......	5
10	147	38.0	11.7	3.05	1.43	0.50	0.17	10
15	3 in.	80.0	25.0	6.50	3.0	1.08	0.36	15
20		136	42.0	11.1	5.2	1.82	0.61	20
25	0.38	4 in.	64.0	16.6	7.8	2.73	0.92	25
30	0.54		89.0	23.5	11.0	3.84	1.29	30
40	0.91	0.22	152	40.0	18.8	6.6	2.20	40
50	1.38	0.34	5 in.	60.0	28.4	9.9	3.32	50
60	1.92	0.47		85.0	39.6	13.9	4.65	60
75	3.00	0.73	0.24	129	60.0	20.9	7.1	75
100	4.96	1.22	0.41	6 in.	102	35.8	12.0	100
125	7.6	1.86	0.64		155	54.0	18.2	125
150	10.5	2.62	0.88	0.36	8 in.	76.0	25.5	150
200	17.8	4.40	1.48	0.62		129	43.1	200
250	27.2	6.72	2.24	0.95	0.23	10 in.	66.0	250
300	38.0	9.30	3.14	1.32	0.32		92.0	300
400	65.0	16.0	5.40	2.21	0.55	0.19	156	400
500	98.0	24.0	8.10	3.34	0.83	0.28	12 in.	500
600	137.0	33.7	11.3	4.91	1.16	0.40		600
750	......	51.0	17.2	7.12	1.77	0.60	0.25	750
1000	......	88.0	29.2	12.04	2.98	1.01	0.41	1000
1250	......	......	44.5	18.50	4.43	1.51	0.62	1250
1500	......	......	......	25.6	6.29	2.14	0.89	1500
2000	......	......	......	......	10.80	3.60	1.49	2000
2500	......	......	......	......	15.4	5.40	2.26	2500
3000	......	......	......	......	......	7.72	3.15	3000
4000	......	......	......	......	......	14.8	5.41	4000
5000	......	......	......	......	......	......	8.17	5000

CENTRIFUGAL PUMPS

GOULDS BELT DRIVEN

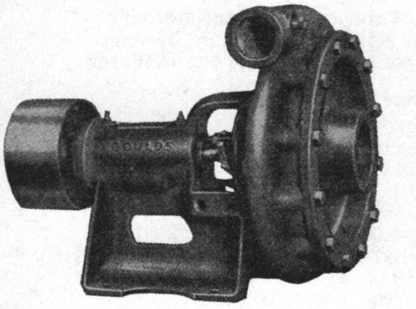


Fig. 3769—Single Stage, Enclosed Impeller, Ball Bearing

Ideally suited for clear liquid applications such as irrigation and other farm water service, for general water supply, circulating and transfer service in industrial plants, for general contractor and building work and a multitude of other uses.

Simplicity of construction, relatively light weight, compact size and large scale production permit prices unusually low when quality and ratings are considered. Finest quality materials coupled with extreme accuracy in manufacture assure long life with reliable, trouble-free performance. Exclusive hydraulic design results in high operating efficiency with relatively low power consumption.

Volute type casing. Discharge nozzle can be swiveled to any of four positions. Tapped openings provide for priming, venting and draining. Screwed suction and discharge connections on all pumps up to 3 in. suction and 2½ in. discharge. Flanged connections on all larger sizes.

Enclosed, single suction impeller, cast in one piece, statically balanced to insure smooth operation.

Stuffing box cast integral with casing and provided with bolted type gland.

Water deflector, furnished on size 6D only, prevents leakage of liquid into inboard bearing. On other sizes hub of bearing acts as deflector.

Shaft is of ample strength and rigidity.

Support head cast integral with bearing housing. Pump casing is bolted to support and permanently aligned by male and female lock fit. Support forms collecting basin for gland drip which can be piped away.

All pumps built in right hand construction; i.e. clockwise rotation when viewed from motor end.

Size, Nos.	With Flat Pulley, each	Disc., in.	Suct., in.	Pulley, in. diam. x face	Wt. each, lbs.
1C	$ 87.00	1	1½	5x3	100
1½C	105.00	1½	2	7x4	110
2C	127.00	2	3	7x4	120
3CS	137.00	3	4	7x4	150
3CL	159.00	3	4	10x6	200
4C	192.00	4	6	10x6	250
1¼D	127.00	1¼	1½	7x4	125
2DL	146.00	2	3	7x4	140
3DL	184.00	3	4	10x6	225
4D	216.00	4	6	10x6	250
6D	236.00	6	6	10x6	275

Performance Chart

All ratings are for clear, cold water and based on 15 ft. max. suction lift, but in no case should suction lift exceed ⅔ of total head. Max. total pressure 150 lbs. Max. suction pressure 50 lbs. Max. temperature of liquid handled 220° F. Max. RPM all sizes, 2100.

Table shows RPM and actual Brake HP required to operate pumps. Example: 1020–.07 indicates 1020 RPM and .07 HP. Belt losses are not included. Add 10% for flat belt drive—5% for V-belt.

Use endless flat belt or V-belt. Avoid bulky belt fasteners and belt tension should not be excessive.

Selection based on use of maximum diameter impeller in each case.

Size, Nos.		Total head, ft.															
	GPM	10	15	20	25	30	35	40	45	50	55	60	70	80	90	100	110
1C	10	680-.06	820-.09	950-.14	1050-.17	1130-.22	1230-.26	1300-.3	1360-.34	1450-.4	1510-.48	1590-.54	1690-.69	......	......	......	......
	20	710-.09	850-.14	950-.19	1060-.25	1150-.31	1250-.39	1320-.45	1410-.51	1470-.58	1540-.66	1600-.74	1730-.89	......	......	......	......
	30	800-.15	925-.21	1020-.28	1100-.34	1200-.41	1280-.49	1350-.58	1420-.66	1480-.74	1560-.83	1640-.93	1750-1.1	......	......	......	......
	40	900-.24	1030-.31	1110-.39	1180-.48	1350-.56	1350-.64	1420-.74	1480-.81	1550-.93	1610-1.05	1680-1.15	......	......	......	......	......
	60	1100-.6	1200-.62	1270-.76	1380-.88	1450-.97	1520-1.08	1590-1.23	1660-1.3	1710-1.46	1750-1.5	......	......	......	......	......	......
1½C	25	650-.11	800-.18	940-.27	1040-.37	1120-.5	1200-.63	1300-.75	1370-.85	1440-1	1520-1.15	1580-1.3	1700-1.6	......	......	......	......
	50	720-.2	860-.3	960-.4	1050-.53	1160-.65	1230-.77	1310-.97	1380-1.14	1450-1.25	1530-1.5	1600-1.6	1710-1.9	......	......	......	......
	75	890-.32	960-.48	1070-.6	1120-.75	1230-.9	1310-1.05	1380-1.2	1460-1.4	1500-1.55	1570-1.75	1630-1.95	1750-2.3	......	......	......	......
	100	980-.54	1060-.71	1140-.87	1250-1.07	1310-1.24	1390-1.4	1450-1.6	1550-1.8	1600-2	1650-2.2	1700-2.4	......	......	......	......	......
	125	......	1250-1.1	1300-1.3	1380-1.45	1470-1.6	1530-1.8	1590-2.1	1620-2.3	1670-2.5	1720-2.8	......	......	......	......	......	......
2C	100	......	......	1000-.8	1060-1.0	1150-1.2	1250-1.4	1320-1.7	1360-1.9	1460-2.1	1520-2.4	1600-2.7	1740-3.2	......	......	......	......
	150	......	......	1070-1.2	1150-1.5	1240-1.7	1320-1.9	1400-2.3	1460-2.6	1520-3.0	1600-3.3	1670-3.6	1750-4.2	......	......	......	......
	200	......	......	......	1290-2.1	1360-2.4	1420-3.0	1490-3.2	1550-3.5	1600-3.8	1680-4.2	1720-4.6	......	......	......	......	......
3CS	150	750-.53	850-.78	950-1	1030-1.2	1100-1.5	1180-1.8	1270-2.1	1310-2.4	1410-2.7	1460-3	1520-3.3	1650-4	1750-5.2	......	......	......
	200	......	950-1.1	1010-1.4	1100-1.7	1170-2	1250-2.3	1340-2.6	1380-2.95	1450-3.3	1520-3.75	1570-4.2	1670-4.9	1750-5.7	......	......	......
	250	......	......	1170-1.9	1190-2.3	1260-2.6	1320-3.1	1380-3.5	1450-3.7	1520-4.1	1570-4.6	1620-4.9	1700-5.8	......	......	......	......
	300	......	......	......	......	1400-3.5	1420-3.85	1460-4.3	1520-4.7	1580-5.2	1640-5.6	1680-6	1760-7	......	......	......	......
3CL	200	690-.63	800-.95	910-1.3	1010-1.6	1110-2.05	1200-2.5	1260-2.9	1350-3.3	1390-3.8	1470-4.3	1530-4.7	1650-5.5	1750-6.4	......	......	......
	300	870-1.2	950-1.6	1000-1.9	1100-2.4	1170-2.8	1250-3.3	1300-3.8	1370-4.3	1450-4.9	1500-5.4	1570-6.1	1660-7.2	1750-8.2	......	......	......
	400	......	......	1200-3.1	1230-3.7	1290-4.1	1350-4.5	1390-5.1	1460-5.7	1500-6.3	1550-6.95	1630-7.6	1730-8.85	......	......	......	......
	500	......	......	......	......	1490-5.8	1500-6.5	1560-7.2	1610-7.9	1630-8.3	1660-9.1	1720-9.7	......	......	......	......	......
4C	400	750-1.3	850-1.8	940-2.4	1040-3	1120-3.7	1210-4.5	1290-5.2	1340-6	1430-6.7	1500-7.5	1560-8.4	1680-10.1	......	......	......	......
	600	......	......	1080-4	1170-4.6	1210-5.5	1280-6.5	1350-7.4	1400-8.2	1500-9.1	1550-10.2	1610-11.1	1730-13.1	......	......	......	......
	800	......	......	......	......	1400-8.4	1420-9.4	1500-10.5	1540-11.1	1590-12.3	1630-13.55	1680-14.5	......	......	......	......	......
1¼D	25	......	617-.21	707-.03	778-.40	845-.51	927-.61	992-.74	1050-.86	1105-1.0	1157-1.1	1207-1.3	1303-1.6	1393-1.9	1475-2.3	1557-2.6	1630-3.2
	50	......	680-.37	760-.49	865-.63	900-.76	965-.91	1027-1.1	1078-1.2	1134-1.4	1185-1.5	1233-1.7	1327-2.0	1415-2.4	1500-2.8	1575-3.2	1650-3.6
	75	......	......	856-.78	916-.94	980-1.1	1037-1.3	1088-1.5	1143-1.7	1190-1.8	1240-2.0	1286-2.2	1373-2.7	1455-3.1	1535-3.5	1610-4.1	1683-4.5
	100	......	......	......	......	......	1127-1.8	1178-2.0	1225-2.2	1273-2.5	1318-2.7	1360-2.9	1443-3.4	1523-3.9	1600-4.5	1670-5.0	1740-5.5
	125	......	......	......	......	......	......	......	......	1378-3.3	1410-3.6	1450-3.8	1530-4.3	1600-4.9	1675-5.5	1740-6.1	......
	150	......	......	......	......	......	......	......	......	......	......	......	......	1700-6.2	1770-6.8	......	......
2DL	150	......	820-.93	850-1.1	930-1.35	990-1.6	1050-1.85	1100-2.15	1150-2.4	1210-2.7	1280-2.95	1330-3.25	1430-3.95	1520-4.65	1600-5.3	1690-6.3	1750-6.95
	200	......	......	970-1.8	1040-2.1	1080-2.3	1130-2.7	1180-2.9	1230-3.2	1280-3.6	1330-4	1380-4.3	1470-5	1560-5.9	1640-6.6	1710-7.5	......
	250	......	......	......	......	......	1250-4	1290-4.2	1330-5.1	1370-4.9	1410-5	1460-5.5	1550-6.3	1630-7.2	1710-8.1	......	......
	300	......	......	......	......	......	......	1450-5.5	1460-5.7	1500-6.3	1540-6.7	1570-7.3	1640-7.9	1700-8.8	......	......	......
3DL	300	......	790-1.7	850-2	920-2.5	980-2.9	1050-3.4	1110-3.9	1170-4.4	1220-4.9	1280-5.4	1320-6	1400-7.2	1500-8.3	1590-9.6	1660-10.7	1740-11.9
	400	......	......	975-3.4	1020-3.95	1070-4.3	1120-4.8	1180-5.3	1220-5.9	1280-6.5	1330-7.1	1390-7.8	1470-9.1	1560-10.4	1620-11.8	1750-13.1	......
	500	......	......	......	......	......	1240-7.4	1290-7.5	1330-8.1	1380-8.9	1410-9.1	1460-9.8	1540-11.5	1620-13.0	1690-14.6	1750-16.2	......
	600	......	......	......	......	......	......	......	......	1460-12.6	1520-13.2	1560-13.6	1620-15.2	1700-16.2	......	......	......
4D	400	......	790-2.2	880-2.7	950-3.2	1000-3.8	1050-4.4	1100-5.1	1140-5.8	1210-6.4	1250-7	1300-7.8	1400-9.2	1490-10.6	1580-12.7	1670-14.5	1700-16
	500	......	......	980-3.7	1020-4.3	1080-5.1	1120-5.7	1180-6.5	1220-7.2	1270-7.9	1310-8.7	1370-9.5	1430-11.2	1520-12.8	1600-14.6	1670-16.2	1750-18
	600	......	......	......	......	1160-6.7	1220-7.4	1270-8.3	1300-9	1350-9.7	1400-10.5	1430-11.5	1510-13.3	1580-15.2	1660-17.1	1720-19	......
	700	......	......	......	......	......	......	1360-10.4	1440-11.05	1440-12.1	1490-13	1510-14	1600-15.9	1680-17.9	1720-20.2	......	......
	800	......	......	......	......	......	......	......	......	......	1560-16.3	1600-16.8	1670-19.4	1740-21.3	......	......	......
6D	600	......	670-2.8	760-3.7	845-4.8	920-5.8	990-7.1	1060-8.4	1120-9.8	1180-11	1240-12.5	1300-14.2	1390-17.2	......	......	......	......
	800	......	760-4.2	820-5.2	885-6.2	950-7.4	1020-8.7	1080-10.	1130-11.4	1180-12.8	1240-14.5	1300-16.2	1400-19.7	......	......	......	......
	1000	......	......	925-7.6	970-8.5	1030-9.6	1080-11.1	1120-12.3	1175-12.9	1220-15.3	1280-16.8	1320-18.7	1400-22	......	......	......	......
	1200	......	......	......	......	......	1160-14.8	1210-15.6	1250-17.3	1310-18.5	1340-20.4	1380-22.2	......	......	......	......	......
	1400	......	......	......	......	......	......	......	1340-22.1	1370-24	1410-25.6	1450-27.2	......	......	......	......	......

CENTRIFUGAL PUMPS

GOULDS BELT DRIVEN

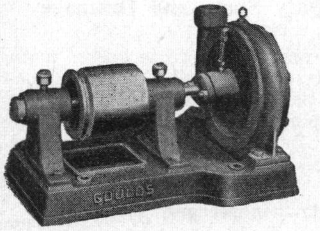


Fig. 3010—Single Stage, General Service

This is a sturdy, efficient pump, which, due to its simple construction, sells at low cost. Has capacities from 5 to 100 GPM with heads up to 70 ft. Belt drive permits a wide range of heats and capacities by allowing pump to operate at the proper speed for any given conditions.

Cast iron casing with vent cock, priming connections and drain openings. Cast iron open type impeller with fixed diameter. Steel shaft.

Babbitted bearings; sizes 1 and 1½ in. have one pedestal bearing, all others have two bearings. Steel thrust collar operates against babbitted face of bearing. Stuffing box provided with bronze lantern or water seal ring and bolted iron gland which can be backed off, permitting easy access for repacking.

Single tight pulley. All sizes have combination flat and single groove V-pulley which makes pump adaptable for either flat or V-belt drive. Maximum HP single V-belt, 1HP.

Size suction and discharge, in.	Each	Pulley, in. Diam. x Face	Cap., GPM	Max. head, ft.	Max. HP	Speed, RPM	Wt. each, lbs.
1	$27.50	3 x 2½	5– 25	50	1	1200–2800	30
1½	30.00	4 x 3	20– 45	60	2	1100–2500	35
2	48.50	5 x 5	45–100	70	4	800–2000	100

GOULDS MOTOR DRIVEN

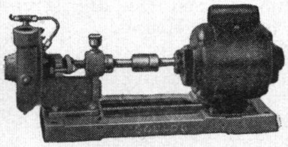


Fig. 3137—Single Stage, General Service

Same as Fig. 3010 above but furnished with bronze bushed bearing and with bed plate and coupling for direct motor drive.

Less motor.

Size suction and discharge, in.	Each	Motor, HP	Rating at 1750 RPM — GPM 10 — Head in feet	20	30	40	50	Wt. each, lbs.
1	$35.00	⅓	23	20	10	..	..	40
1½	44.00	½	25	23	21	19	15	70
1½	44.00	¾	30	29	27	25	22	70

CENTRIFUGAL PUMPS

GOULDS "CLOSE-CUPLD"

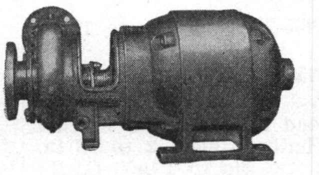


Fig. 3650—Single Stage, Enclosed Impeller

Pump and motor are combined in a single, complete, compact unit, easy to install and ready to run. Have a wide field of use in all kinds of industrial service. Designed for efficiency, simplicity, ruggedness and long life.

Volute type casing. Discharge nozzle can be swiveled to any of three positions. Enclosed, single suction type impeller, cast in one piece; statically balanced. Renewable type wearing rings. Stuffing box cast integral with case. Water deflector prevents leakage of liquid into motor bearing. Split type gland.

Adapter maintains rigid assembly between casing and motor and bracket. Motor assembled as an integral part of the complete unit.

All pumps built in right hand construction; i.e. clockwise rotation when viewed from motor end.

Available in bronze fitted, all iron or all bronze.

Selection Chart—Standard Bronze Fitted Type

Motors are drip protected open type, 220/440 volts, 3 phase, 60 cycle.

	Total Head in Feet 50	100	150	200	250
50 GPM					
Size	1¼x1½x5-1½	1¼x1½x7-3	1¼x1½x7-5	1¼x1½x8-7½	1¼x1½x8-7½
Wt., lbs..	112	146	159	250	250
Each ...	$238.00	283.00	300.00	353.00	353.00
100 GPM					
Size	1½x2x5-2	2x2x7-5	2x2x7-7½	1½x2x9-15	1½x2x9-15
Wt., lbs..	130	166	202	385	385
Each ...	$262.00	309.00	351.00	546.00	546.00
150 GPM					
Size	2½x2½x6-3	2x2x7-7½	2x3x7-10	2x3x7-15	2x2½x9-20
Wt., lbs..	157	202	310	375	415
Each ...	$297.00	351.00	477.00	563.00	655.00
200 GPM					
Size	2½x2½x6-5	2½x2½x6-7½	2x3x7-15	2x3x7-20	2x2½x9-20
Wt., lbs..	170	206	375	410	415
Each ...	$314.00	356.00	563.00	627.00	655.00
300 GPM					
Size	3x3x5-5	3x4x7-15	3x4x7-20	2½x3x9-25	2½x3x9-30
Wt., lbs..	210	383	415	517	517
Each ...	$331.00	600.00	664.00	819.00	893.00
400 GPM					
Size	3x3x5-7½	3x4x7-15	3x4x7-25	2½x3x9-30	2½x3x9-40
Wt., lbs..	245	383	513	517	567
Each ...	$373.00	600.00	828.00	893.00	952.00
500 GPM					
Size	3x4x7-10	3x4x7-20	3x4x7-25	4x5x7-40	....
Wt., lbs..	319	415	513	576	....
Each ...	$514.00	664.00	828.00	979.00	....
750 GPM					
Size	*6x6x9-15	5x5x7-25	5x5x7-40	5x5x7-60	....
Wt., lbs..	600	546	596	831	....
Each ...	$742.00	865.00	998.00	1377.00	....

Note—First two figures of Pump size refer to discharge and suction connections, third figure to casing classification, and last figure to Motor horsepower. Ratings are for clear cold water, 15 ft. maximum suction lift, 3550 RPM. *Indicates 1750 RPM.

Other pump sizes are available for various heads and capacities.

GOULDS "CLOSE-CUPLD"

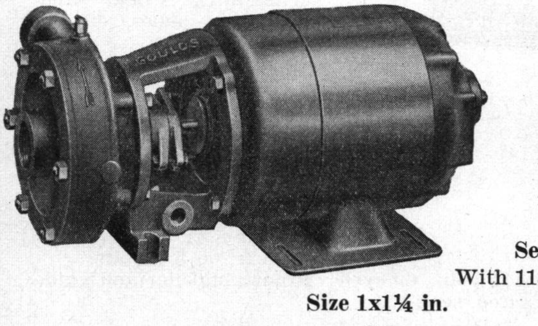


Fig. 3640—Single Stage, Enclosed Impeller

Special Constructional Features

Full complement of renewable parts such as casing wearing ring and shaft sleeve. Positive protection of motor shaft from corrosive as well as abrasive action of liquid is assured by tight metal-to-metal joints between impeller hub and shaft sleeve, and impeller hub and impeller nut. Casing and adapter are bolted together with male and female lock, and adapter to motor likewise, insuring maintained alignment. Rigid shaft extension insures against deflection or eccentricity. Pump can be mounted in any position except vertically with motor below pump. Support for both pump and motor assures substantial mounting.

Bronze fitted is regular construction. Can also be furnished in all-bronze and all-iron.

Selection Chart—Standard Bronze Fitted Type

With 115/230 volt, single phase, 60 cycle motor, 3450 RPM.

Size 1x1¼ in.

Unit Nos.	Each	Gallons per minute 10 — Total head in feet	20	30	Net wt. each, lbs.
1A-⅓	$108.00	41	35	24	85
1A-½	133.00	55	48	37	90
1A-¾	142.00	73	67	56	105
1A-1	163.00	90	86	75	110
1A-1½	231.00	108	103	95	120

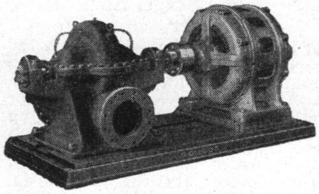
Size 1¼x1½ in.

Unit Nos.	Each	Gallons per minute 15 — Total head in feet	30	45	Net wt. each, lbs.
1¼A-⅓	$116.00	30	26	..	95
1¼A-½	141.00	40	37	30	100
1¼A-¾	150.00	51	49	42	115
1¼A-1	171.00	65	62	55	120
1¼A-1½	239.00	76	74	70	130
1¼A-2	277.00	92	90	86	135

All above, open stock.

CENTRIFUGAL PUMPS

GOULDS SINGLE-STAGE, DOUBLE-SUCTION



Figures 3065-75-85-95—Sleeve Bearing Types.

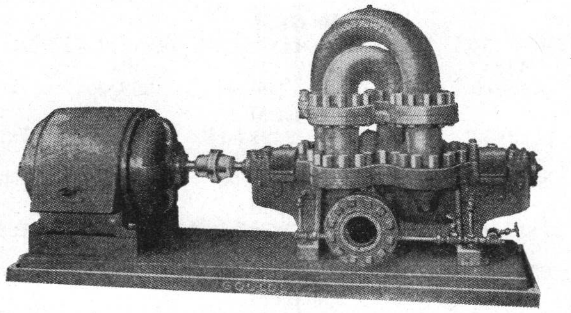
Figures 3450-60-75-80—Ball Bearing Types.

This broad line of double suction pumps is built in sizes 2 to 16 in. with capacities up to 15,000 GPM; heads up to 500 ft.

For general water supply, municipal water works, circulating and booster service, and low pressure boiler feeding.

Complete Information, Specifications and Prices on Request

GOULDS HIGH-PRESSURE, MULTI-STAGE



Figures 3360-3365

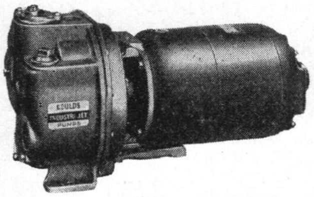
Built especially for boiler feeding, oil pipe line or refinery service, hydraulic pressure service and other general use where high pressures are required.

Built in 3 to 8 in. sizes; 2 to 8 stages; capacities up to 2250 GPM; heads up to 3050 ft.

Complete Information, Specifications and Prices on Request

CENTRIFUGAL-JET PUMPS

GOULDS "INDUSTRI-JET"



No Close Clearances

No Air or Vapor Binding

High Suction Lifts

Automatically Recovers Lost Prime

A combination of the centrifugal pump with the jet or ejector in one compact unit, providing an economical, dependable, long life pump for relatively small capacities against high pressures. Built in sizes ¼ HP to 5 HP, capacities up to 35 gals. per minute. Pressures up to 190 pounds depending on capacity.

Applications

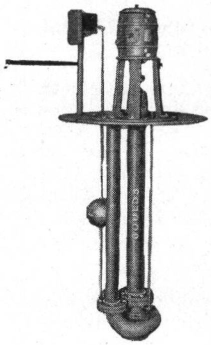
Suitable for handling cold water, hot water, kerosene, gasoline, alcohol, carbon tetrachloride and similar liquids. Particularly adapted for such industrial applications as general water supply, hot and cold water circulating service, condensate return, boiler feeding, filter press service, air conditioning and refrigeration, spraying and booster service.

These general pumping services and the range of liquids which can be handled indicate the broad applications of Goulds "Industri-Jet" Pumps for industrial pumping. These pumps are ideal for many specialized applications too numerous to list. If a low cost unit is required for small capacities against high pressures, the "Industri-Jet" will give dependable performance over long periods with a minimum of upkeep and maintenance expense.

Complete Information, Specifications and Prices on Request

VERTICAL CENTRIFUGAL PUMPS

GOULDS



For Heavy-Duty Sump and Drainage Service

Used for removing water from boiler room pits, pipe tunnels, elevator pits, cellars, basements, or any part of the building where water collects below the sewer line. Also for transfer of liquids or other industrial service where this type of pump is desirable.

Fig. 3047—Submerged Type

This is a large, heavy-duty sump pump built in four sizes for pit depths from 3 to 20 ft. Capacities from 10 to 650 GPM, for heads up to 65 ft.

With this type, which is the most commonly used, the pump itself is placed in the pit below water level and connected to the motor by a vertical shaft. In such cases there is no suction pipe. The discharge pipe is brought up and welded to the pit cover, which also supports the motor above the floor line. The units come complete with float and automatic switch which starts and stops the pump according to levels in the pit. Units of single or duplex type are available with various sized covers and for different depths of pits.

Fig. 3047-F—Dry Pit Type

Capacities 10 to 800 GPM, heads up to 130 ft.

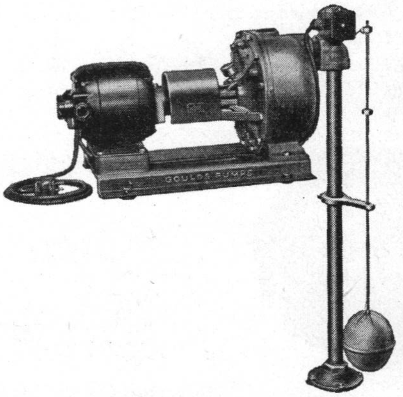
The dry pit type of sump pump, differs from the ordinary sump pump in that it is arranged for dry pit, rather than submerged operation. A pipe connection is furnished in the suction of the pump and the unit is installed alongside of the pit containing the liquid to be pumped. When valves are placed in the suction and discharge lines, the pump can be serviced at all times. Construction is the same as in Figure 3047 with the addition of a stuffing box in the pump to prevent leakage into the dry pit. When installing these outfits, an ejector connection is usually inserted in the suction pipe so that any accumulated seepage can be removed from the dry pit by the pump.

These dry pit type pumps are suitable for somewhat higher operating heads than the submerged type pumps. Units are furnished with pit covers for motor support and the discharge line extends up through this cover and is welded to it.

Complete Information, Specifications and Prices on Request

CELLAR DRAINERS

GOULDS



Self-Priming Centrifugal Pump

Nothing in sump but suction pipe and weights. Pump is never subjected to binding or clogging due to accumulated silt, sand, coal, dust, ashes, etc. in sump.

Sump and strainer easy to clean.

Motor is not over the sump and is not subjected to vapor, moisture or fumes arising from sump.

Pump may be set away from sump up to a maximum of 8 ft. on 2 ft. pits and 5 ft. on 5 ft. pits.

Standard motor, 115 volts, 60 cycle. Bronze impeller and guide vane. Grease lubricated seal.

Capacity in Gallons Per Hour

Total head, ft.	10	15	20	22	24
Cap., gals.	2400	2100	1600	1200	600

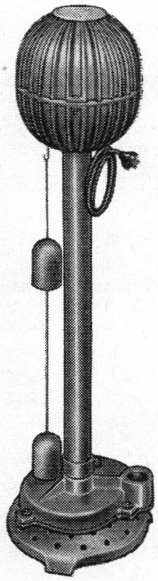
Each

Fig. 3231—1 in. suction and discharge, 26⅞ in. long from end of motor to end of float; wt. each 78 lbs. $70.00

Open stock.

SUMP PUMPS

PRECISION



Entire pump is absolutely rustproof, being made of stainless steel, bronze and special aluminum alloy.

Oversize totally enclosed dust and moisture proof motor with built-in float switch and over-load protection.

Sealed motor ball bearing and oilite pump shaft bearing will never require additional lubrication.

The indestructible float can be adjusted to suit depth of sump. Will operate perfectly in a sump 12 in. round or 12 in. square.

Capacity in Gallons Per Minute

Head, ft.	2	6	10	14	19
Cap., gals.	61	53	51	42	27

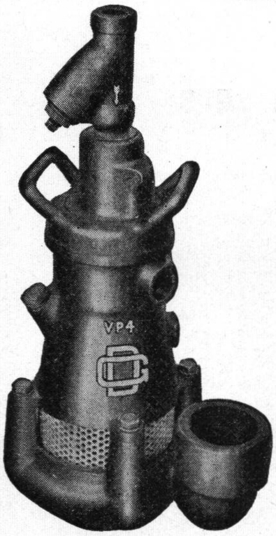
With ¼ HP Motor, 115 Volts, 1 Phase, 60 Cycles

	Each
Model C—1¼ in. discharge; wt. each 40 lbs.	$60.00

One in a carton.

PNEUMATIC SUMP PUMPS

GARDNER-DENVER



Model VP4

Designed on a new principle, the VP4 has the extra endurance needed to stand the rough usage which a pump must take in lifting water, usually muddy, from excavations on construction work—sumps in mines—in emptying tanks, bilges, sewers, tunnel headings—or in any application where a readily portable pump of high capacity and complete dependability is needed.

An outstanding feature of the VP4 is the top suction principle. This pump cannot dig in and bury itself in soft mud, thus blocking the screened inlet. The VP4 can sink more than 4 in. before the intake is blocked.

Even more important, the top suction design of the VP4 eliminates one of the most common causes of pump failure—breaking of the pump shaft seal because of water pressure.

Pump is high-efficiency closed impeller type, with impeller screwed on and locked to the pump shaft. Impeller is of long-life cast alloy. Powerful vane type air motor with renewable bronze end bearing plates. Built-in oiler lubricates all moving parts.

May be connected in series for higher heads.

21¾ in. high over all; will enter a 10x12 in. opening; ¾ in. pipe size air inlet; tapped for 2½ in. pump discharge.

Capacity in Gallons Per Minute

At 80 lbs. air pressure.

Head, ft.	20	60	100	160
No. VP4 (std.)	225	140	35	...
No. VP4S (2 stage)		218	65	75

	Each
No. VP4—Standard; wt. each 95 lbs.	$275.00
No. VP4S—2-Stage; wt. each 190 lbs.	560.00

Open stock.

ROTARY PUMPS

GOULDS MOTOR DRIVEN

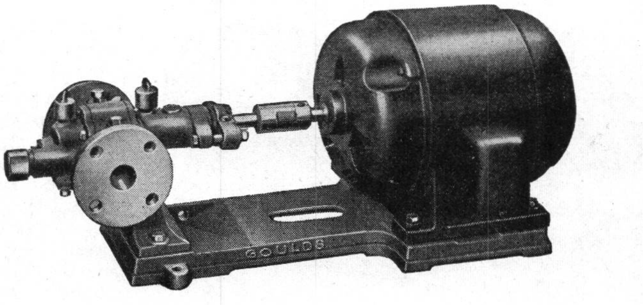


Fig. 1942

A rotary pump for direct drive through flexible coupling at standard electric motor speeds.

Built in ten sizes with a capacity range up to 75 gals. per minute at 75 lbs. maximum liquid pressure.

Simple in construction with only two moving parts; split bolted type gland; quiet in operation; removable bearings; built-in relief valve.

Close grained cast iron case and cover, accurately machined. Rotors of double helical or herringbone style gears. Driven gear bronze, driving gear steel. High lead bronze bearings.

Extra deep stuffing box; metallic packing. Gland split in half for easy removal. Relief valve built in pump cover; externally adjustable.

Screwed suction and discharge connections on smaller sizes; larger sizes flanged.

Flexible motor coupling provides complete flexibility and acts as a shock absorber and insulator.

Cast iron bedplate with suitable drip collecting basin having an outlet tapped for iron pipe connection.

Direction of rotation is clockwise when facing shaft coupling. Discharge nozzle will be at the right and suction to the left.

These pumps may be recommended for temperatures up to 350° F. but pumps operating at high temperatures should be run at reduced speeds. For temperatures over 150° F. refer to factory for recommendations.

Note—Primarily designed to handle liquids possessing inherent lubricating qualities. Should never be used to handle any liquid containing abrasives or a corrosive that will attack the metal of which the pump is constructed.

Complete Specifications and Prices on Request

GOULDS HAND

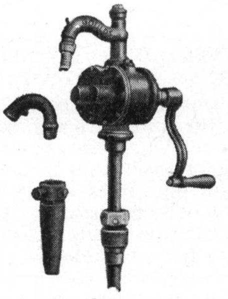


Fig. 464—For Pumping From Barrels

Built in two sizes with capacities of 10 and 14 GPM respectively at 100 RPM. Regularly furnished with an adjustable attachment for steel barrels as illustrated. Attachment on pump No. 1 has two threads, one to fit 1½ in. and the other 2 in. pipe thread. No. 3 size will fit only 2 in. Attachment is adjustable and can be moved to any position on the suction pipe.

Taper sleeve for wooden barrels can be furnished when especially ordered. In wood barrels the pump can be further secured by forcing the sharp ends of the suction pipe into the bottom of the barrel.

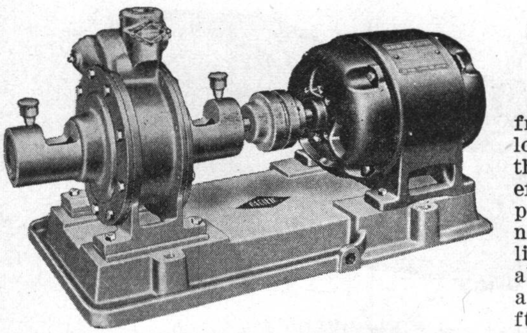
Casing and cams are cast iron; shafts are steel; screw type gland is cast iron. All surface and gland packings are suitable for handling oils such as kerosene, gasoline, fuel oil and distillate.

Size, Nos.	Each	Gals. per min.	Suction pipe, in.	Discharge, in.	Discharge head, ft.	Wt. each, lbs.
1	$32.00	10	1	1	60	41
3	37.50	14	1¼	1¼	60	53

Open stock.

TURBINE PUMPS

PACIFIC PACO



Single and Two-Stage, for High Head Service

In capacities from 2 to 150 gallons per minute, these simple and efficient turbine pumps handle any non-viscous liquids, free from abrasive matter, at heads up to 500 ft. and higher.

Amazing suction performance is characteristic of the "Paco" pump. Suction lifts up to 28 ft. at sea level are standard performance. The capacity lessens, of course, when lift exceeds 15 or 20 ft.

"Paco" pumps are self-priming, when installed with self-priming accessories, or when piped in with a short length of discharge pipe vertically above pump, and with check valve in the suction line.

Two Styles—With Rotary Seals and with Conventional Packed Boxes

The pump with the rotary seals is ideal for pumping liquids which must be conserved, or which would constitute a hazard if allowed to leak out.

"Paco" pumps are double suction design. Being hydraulically balanced there is no end thrust.

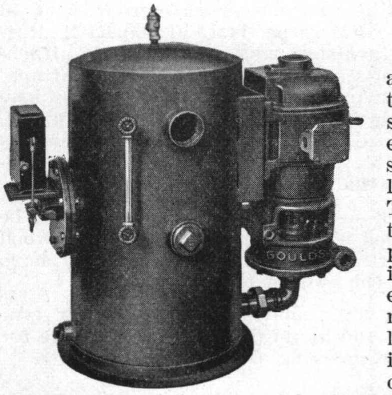
All models can be furnished either right-hand or left-hand rotation, or may be changed from one to the other in the field.

They will pump water, brine, gasoline and other petroleum products, including light oils, alcohol, light syrups, liquid foods and other clean, non-viscous liquids. They are widely used for pressure water systems, booster pumps, condensate and boiler feed units, hot and cold water circulating, tank loading, brine circulating, hydraulic mechanisms, cooling tower service, etc.

Complete Information, Specifications and Prices on Request

CONDENSATE RETURN UNITS

GOULDS



For 15 to 275 Boiler HP and 10 to 100 lbs. Steam Pressure

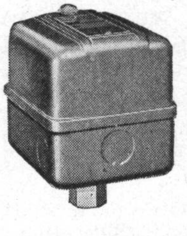
These outfits are especially adapted for automatically returning condensation from steam radiators, steam jacketed kettles, pipe coils or other steam heated apparatus, to low and high pressure boilers. The condensate is collected in the receiver from which the pump takes and forces it back into the boiler. Care has been exercised to utilize proper size receivers, so that the water level in the boiler is not seriously affected, and that the condensate, without being retained too long, is pumped back as near boiling point as possible.

The installation of these outfits conserves heat, saves fuel, helps keep the return lines free, and in general improves the efficiency of the heating system.

Complete Information, Specifications and Prices on Request

PRESSURE SWITCHES

SQUARE D, INTERMEDIATE DUTY



Class 9013—NEMA No. 1 General Purpose Enclosure

These switches are designed for the control of intermediate duty electrically driven water pumps and air compressors.

Enclosure finished in blue-gray enamel.

Diaphragm actuated. Contacts open on pressure increase.

Two Types

Type GSG are standard water pump switches.

Type GHG are primarily for air compressor use. Pressure release valve can be furnished with GHG types.

Both types are of rugged design, incorporating blocks for high insulating qualities. Heavy silver contacts; wiring terminals accessible and clearly marked; internal parts treated to resist corrosion; range and differential adjustable to meet varying requirements. Diaphragms are of high grade impregnated fabric.

Contact yoke is actuated by a ¾ in. wide non-adjustable beryllium copper spring. Toggle is pivoted on two hardened knife edges. Adjustment of range spring tension varies the pressure needed to snap the toggle over center.

The differential spring is a pick-up spring which acts in conjunction with the range spring. Changing the tension of this spring changes the cut-out pressure.

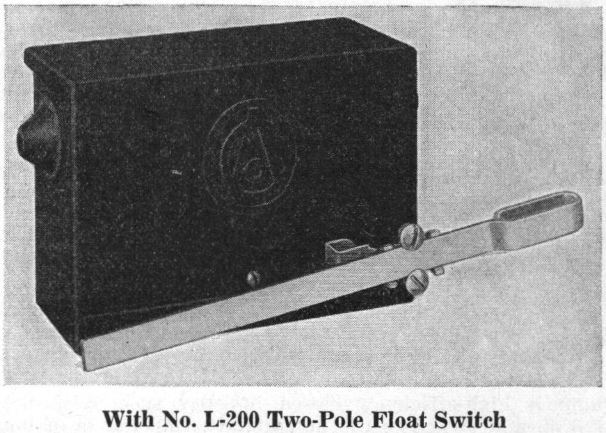
Two poles; ¼ in. pipe tap.

	Each
Type GSG-2—Range 20-80 lbs., differential 12-35 lbs.; wt. each 2½ lbs.	$7.50
Type GHG-2—Range 60-200 lbs., differential 18-40 lbs.; wt. each 2½ lbs.	7.50
Pressure Release Valve—For Type GHG switch	add 2.85

One in a box.

FLOAT SWITCH SETS

AUTOMATIC



With No. L-200 Two-Pole Float Switch

For sump or tank operation; suitable for either pumping in or pumping out application. Standard construction closes circuit at high level and opens at low. By loosening two screws and reversing lever arm, circuit will open at high level and close at low. Minimum float travel depends upon lever arm extension (adjustable). For motors not exceeding 2 HP at 220 volts, No. L-200 can be used without magnetic starter.

NEMA Type II standard enclosure. For back or bottom mounting.

Contents of Set

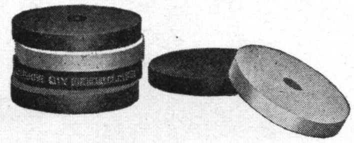
1—No. L-200 switch, described above
4 ft.—¼ in. float rod
2—Rod stops
1—4 in. diameter lifetime glass float
1—Bracket for wall or pipe
1—"U" bolt for 1 in. pipe mounting

	Per set
No. LP-200—Set, complete as described above; wt. per set 3 lbs.	$19.00

One set in a box.

PUMP VALVES

RUBBER



Pump Valves are available in several styles, each of which is suited for a particular purpose. The table shown below lists styles manufactured for ordinary uses. For special recommendations the customer is asked to provide full details, such as working pressures, whether water is hot or cold, clear or gritty, or if it is to be used for boiler feed, condenser, curved guard or for general pumping service. If chemicals are to be used the customer should give kind of chemical, strength and temperature.

Minimum size, 2 in. OD x ⅜ in. thick.

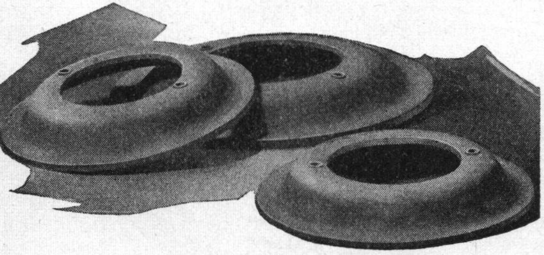
Service Recommendations

Style, Nos.	Recommended for	Pressure, lbs.	Wt. per cu. in., oz.
	Soft Black		
8468	Condenser warm water up to 160°	0-10	.75
	Medium Soft, Black		
8469	General service low pressure cold water	0-80	.88
	Medium Hard, Black		
8443	Cold water	to 150	91
	Hard Black		
8466	Cold water	to 240	.72
	Rock Hard, Black		
8463	Hot water and boiler feeding 212°	to 180	.99

Prices on Request

TRENCH PUMP DIAPHRAGMS

CONDOR



Edson Style, Red Rubber

Built for heavy duty on Gould and Edson power pumps.

Fabricated with the highest quality red synthetic rubber and are of special construction to stand severe service for the longest possible time.

Nos.	Each	Wt. each, lbs.
2	$4.50	9/16
3	5.40	1⅜
4	6.15	1¾

Open stock.

PUMP LEATHERS

CUP

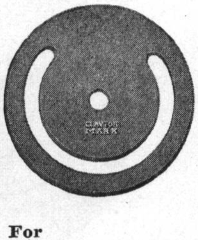
No. 702—"Universal"

Made from high grade oak tanned stock. Carefully selected cups of good quality and uniform thickness.

Size, in.	Per dozen	Std. ht., in.	Std. hole, in.	Wt. 100, lbs.
1	$1.56	7/16	⅜	¾
1⅛	1.56	½	⅜	1
1¼	2.00	½	⅜	1¼
1 5/16	2.32	⅝	⅜	1⅜
1⅜	2.32	⅝	⅜	1½
1½	2.40	⅝	⅜	1¾
1⅝	2.82	⅝	⅜	2
1¾	2.96	11/16	1⅛	2¼
1 13/16	3.20	¾	1 3/16	2½
1⅞	3.20	¾	1 3/16	2½
1 15/16	3.36	¾	1 5/16	2¾
2	3.36	¾	1 5/16	3
2¼	3.58	¾	1⅜	3½
2⅜	4.00	13/16	1½	3¾
2½	4.00	13/16	1⅝	4
2¾	4.44	13/16	1⅞	4¾
2⅞	4.96	13/16	2	5¼
3	4.96	13/16	2	6
3¼	5.94	15/16	2⅛	7
3½	6.64	1	2½	7¼
3¾	7.48	1	2⅝	9½
4	8.58	1 1/16	3	11
4¼	9.42	1⅛	3⅛	12¼
4½	10.38	1⅛	3⅛	13½
4¾	11.80	1⅛	3½	15
5	13.20	1 3/16	3¾	21
5¼	13.90	1¼	3¾	15
5½	14.98	1¼	4	16½
5¾	16.40	1¼	4⅜	19¾
6	17.76	1¼	4½	18¾

3½ in. and smaller, 12; balance 6 in a carton.

LOWER OR CHECK VALVE



No. 717—"Oilfill"

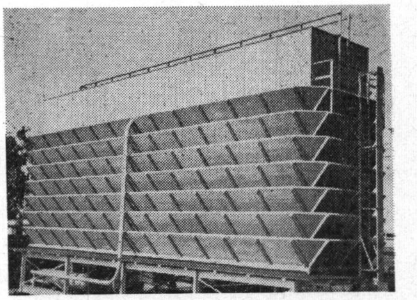
Made of uniformly heavy oak-tanned stock and oil treated. Clean cut and true to dimensions.

For cyl., in.	Per dozen	Outside diam., in.	Wt. doz., lbs.
2	$1.88	2½	¼
2¼	2.08	2¾	¼
2½	2.40	3	⅜
2¾	2.88	3¼	7/16
3	3.16	3½	½
3¼	3.80	3¾	9/16
3½	4.30	4	¾
3¾	4.88	4¼	⅞
4	5.46	4½	15/16
4¼	6.04	5	1¼
4½	6.90	5¼	1 7/16
5	9.18	5¾	1⅝
6	13.20	6¾	2⅙

One dozen in a box.

COOLING TOWERS

SANTA FE



Standard Type N Atmospheric

Here is a typical installation that proves Santa Fe's capacity to cut cooling costs through skillful design, construction and operating efficiency.

The use of highest quality, interchangeable, prefabricated California Redwood, combined with finest mechanical equipment, produce the most efficient, economical cooling tower. This combination of essential components enables Sante Fe engineers to cut cooling costs.

Information Necessary for Quotations

Performance Specifications

1—Quantity of clear water to be circulated.
2—Initial temperature.
3—Final temperature.
4—Wind velocity used in rating tower.
5—Month when heaviest load occurs.
6—Type of service for which tower is to be used.
7—GPM and temperature of water to tower from each source.

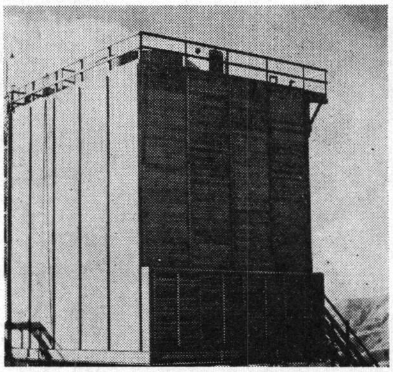
Tower Specifications

1—State whether stairs or ladder are desired.
2—Size of water lines to tower.
3—Advise whether high or low pressure system is desired.
4—State whether basin will be redwood, steel or concrete.

Site Specifications

1—Space available for tower.
2—Advise direction of longest space available to prevailing wind.
3—Location of tower. If on building give height and furnish prints of structure if possible.

Such other information as geographical location and whether labor and erection should be furnished is valuable.

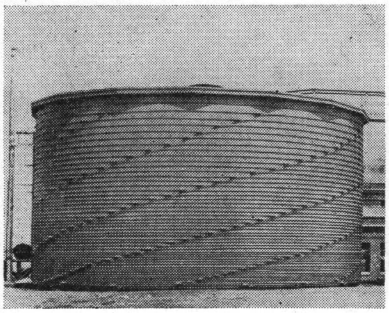


In addition to the atmospheric type cooling tower, there are also available Cylindrical Induced Draft, and Multi-Fin Air-Cooled Towers.

Complete Description, Specification and Prices on Request

WOOD TANKS

SANTA FE



High quality wood tanks for the storage of water and solutions, for all industries are designed and manufactured in shape and size to meet each individual problem.

Ordering Information

1—Size of tank.
  A—Outside diameter.
  B—Stave height.
  C—Thickness of wood.
2—Kind of lumber such as Redwood, Douglas Fir, Cypress, Cedar, etc.
3—Contents—whether hot or cold—with specific gravity.
4—Type of cover.
5—Type of foundation.
6—Number and size of outlets.

Specifications and Prices on Request

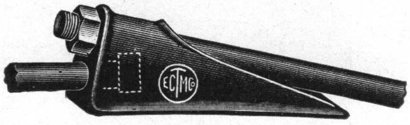
WOOD STAVE PIPE

Wood stave pipe for the transportation of water and other liquids is manufactured in sizes and lengths to meet various conditions.

Specifications and Prices on Request

TANK HOOP FASTENERS

STRAIGHT PULL, CANOPY TOP



Malleable Iron

Has a straight pull on the hoop, with only one nut to draw. Prevents side twist or torsion on the hoop. The length of the fastener is saved in hoop iron.

Advantages over side pull type are: greater bearing surface by 2 in.; easier to draw taut by reason of the take-up not being at highest point of contact.

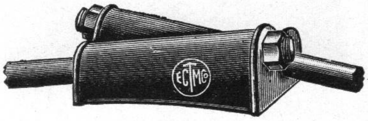
A nut can be used in place of forged head by cutting thread on loop.

Size, in.	Natural finish, each	Galv., each	Length over all, in.	Wt. per 100 pcs., lbs.
½	$0.40	$0.50	5½	81
⅝	.58	.72	6⅜	125
¾	.70	.84	7⅞	150
⅞	.93	1.10	7⅝	200
1	1.15	1.35	8⅜	231
1⅛	2.05	2.42	10	530

Open stock.

TANK HOOP FASTENERS

SIDE PULL



Malleable Iron

For round iron hoops on tanks, vats, silos, etc.

Standard

Size, in.	Natural finish, each	Galv., each	Length over all, in.	Wt. per 100 pcs., lbs.
⅜	$0.36	$0.43	3¼	56
½	.40	.48	4	74
⅝	.50	.62	4⅜	104
¾	.70	.84	4½	140
⅞	1.20	1.40	5⅝	229
1	1.50	1.72	5¾	254
1⅛	2.40	2.65	6⅜	364
1¼	3.00	3.30	6⅝	462
1⅜	3.60	4.05	7½	696
1½	4.20	4.62	7½	626

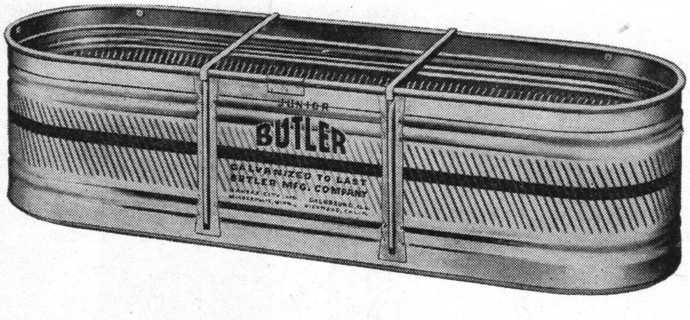
Open stock.

STEEL TANKS

BUTLER "ZINCGRIP" GALVANIZED

Butler tanks are for use around mills, factories, etc., wherever it is necessary to store small amounts of liquids.

Butler tanks are made of "Zincgrip" steel which lasts longer and serves better than ordinary galvanized coating. Spiral corrugations add strength and deep-drawn swedges give extra stiffness to hold the weight of water.



Junior Round End

20 gauge bottom, 24 gauge sides.

Size, ft.				Cap.,	No. of braces		Wt.
Width	Depth	Lgth.	Each	bbls.	Cross	Sides	each, lbs.
2 x	2 x	5	$22.01	3¾	1	. . .	53
2½ x	2 x	6	28.67	5¾	1	. . .	68
3 x	2 x	8	40.68	9½	2	2	105
3 x	2 x	10	49.81	12¼	2	2	134

Open stock.

JUNIOR
BUTLER
GALVANIZED TO LAST
BUTLER MFG. COMPANY
KANSAS CITY, MO.
GALESBURG, ILL.
MINNEAPOLIS, MINN.
RICHMOND, CALIF.

Junior Round

20 gauge bottom, 24 gauge sides.

Size, ft.				Steel tube at	Wt.
Diam.	Depth	Each	Cap., bbls.	top, in.	each, lbs.
5 x	2	$29.62	8½	1$\frac{1}{16}$	79
5½ x	2	33.32	10½	1$\frac{1}{16}$	91
6 x	2	37.79	12½	1$\frac{1}{16}$	104
6½ x	2	42.66	14¾	1$\frac{1}{16}$	117
7 x	2	47.84	17¼	1$\frac{1}{16}$	132
7½ x	2	54.91	20	1¼	150
8 x	2	62.19	22¾	1¼	165

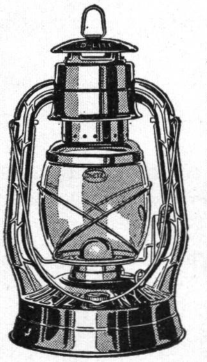
Open stock.

LANTERNS

DIETZ

A **Cold Blast** Lantern is so constructed that only fresh, cold air enters the tubes, while spent air is expelled. **Hot Blast** Lanterns, due to construction of the top, permit a portion of spent air to recirculate through the tubes. As a consequence, a **Cold Blast** produces about double the light of a **Hot Blast** Lantern.

DIETZ No. 2 D-LITE COLD BLAST



Streamlined

The world's most favored lantern.

The finest tubular lantern made.

Balanced draft gives high lighting power.

Cold rolled steel construction, coated with grade "A" pure charcoal tin. No. 262 Wing lock burner.

Low frame reduces size and weight. Broad base prevents overturning. Improved pivoted bail, including automatic support for holding bail upright. Wide opening for cleaning—Fount Capacity 1 qt., Height 13¼ in.—10 c.p. light—1 in. wick—burns 45 hours. D-Lite Loc-Nob globe.

Per dozen

No. 2 D-Lite—Clear globe; wt. per dozen 36 lbs. $31.00

No. 2 D-Lite—Ruby globe 35.00

One-half dozen in a carton.

DIETZ LITTLE GIANT, COLD BLAST

Cold rolled steel coated with bright tin.

A dependable lantern with enlarged fount, making it secure against tipping. No. 201 Wing lock burner. Little Wizard Loc-Nob globe.

Has a 6 c.p. light volume, ⅝ inch wick. Burns 70 hours on one filling. 1 qt. capacity fount. **11½ in.** high.

Per dozen

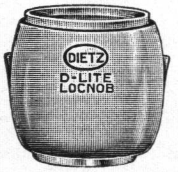
Little Giant—Clear globe; wt. per dozen 30 lbs. $27.50

Little Giant—Ruby globe 30.50

One dozen in a carton.

LANTERN GLOBES

DIETZ D-LITE, LOC-NOB



For D-Lite Cold Blast Lanterns

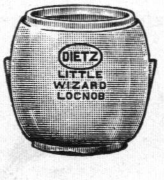
Per dozen

Clear—Wt. per dozen 11½ lbs. $3.30

Ruby 7.30

One dozen in a carton.

DIETZ LITTLE WIZARD, LOC-NOB



For Little Wizard Cold Blast Lanterns

Per dozen

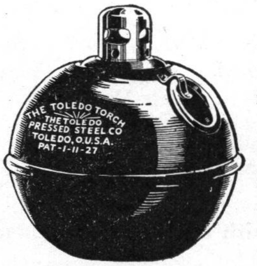
Clear—Wt. per dozen 5½ lbs. $3.30

Ruby 6.30

One dozen in a carton.

ROAD TORCHES

TOLEDO "LEADER"



Self-Righting

The most popular torch made; designed to give many years of trouble-free service.

Not only marks the hazard in a very effective way, but illuminates and defines it as well. The simplicity of construction and operation, the low cost and upkeep make this type of protection most economical.

The shell is made of 20 gauge steel, with a leak-proof mechanical seam.

Per dozen

No. 620—Cap. 3 qts., burns up to 48 hours on one filling; wt. per dozen 70 lbs. $45.75

One-quarter dozen in a carton.

EXTRA HOODS

13 Gauge Steel

Per dozen

No. 670—For No. 620 torch $4.80

Open stock.

EXTRA WICKS

Braided Cotton

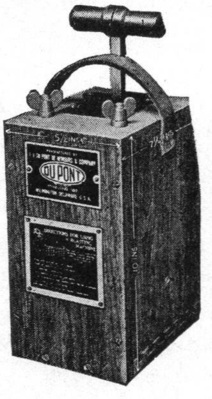
Per dozen

No. 610—18 in. long—For No. 620 torch $2.20

One dozen in a package.

BLASTING MACHINES

DU PONT



Dynamo Type

Used to generate the current for firing blasts by electricity, with elastic blasting caps. Operated by pushing down the rack bar or plunger, which builds up, intensifies and stores the current until the end of the rack bar stroke when the whole accumulated current is sent out through the firing line.

Adapted for all general blasting, quarry and mine work.

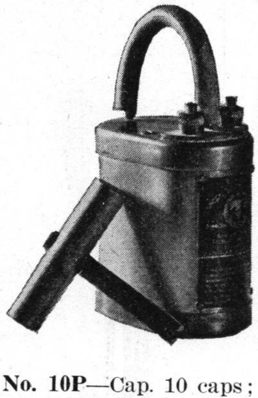
Each

No. 50—Capacity 50 caps; wt. ea. 23 lbs. ....$....

One in a box.

Price on Request

DU PONT POCKET



Magneto Type

Well made throughout. Will develop energy to shoot from one to ten holes.

To operate insert the detachable firing handle in the hole provided, and give the handle a quick, hard twist to the right. Aluminum finish.

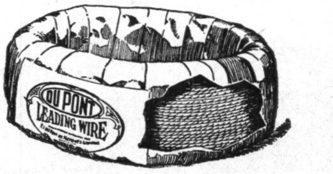
Each

No. 10P—Cap. 10 caps; height 4 in., width 2½ in., depth 3¾ in.; wt. each 5½ lbs. ....$.....

One in a box.

Price on Request

LEADING WIRE



Leading wire is insulated copper wire (No. 14 Brown & Sharpe gauge).

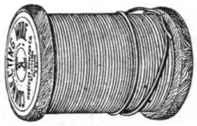
Duplex leading wire is made by binding together two insulated copper wires with an outside insulation, thus giving a return circuit cable that may be handled the same as a single wire. It weighs approximately twice as much as the same length of single leading wire and can be had in coils of the same lengths.

Single leading wire is furnished in coils as follows:

Length, ft.	**200**	**250**	**300**	**500**
App. wt. coil, lbs. ..	4	5	5.8	9.6

Prices on Request

CONNECTING WIRE



For connecting the electric fuse wires from one hole to another when they are not long enough to reach.

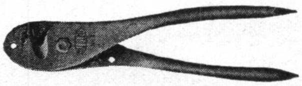
Per pound

No. 20—20 gauge (B. & S.) insulated copper wire, 210 ft. to the pound ....$....

One pound on a spool.

Price on Request

CAP CRIMPERS



Nickel Plated Steel

Designed to prevent accidental cutting of blasting caps. Also used as a fuse cutter.

Each

No. 4—7 in. long; wt. each ½ lb. ..**$3.00**

Open stock.

POWDER BAGS

Pouch Type Pellet Powder Bag

Made of selected cotton coated and impregnated with rubber. Single 3-ply **strap;** two glove fasteners.

Resists fungus, dry rot, acid water, wet humid conditions and other destructive elements found underground.

Each

No. 5—3½x8½x9½ in.; wt. each ⅞ lb. **$2.60**

Open stock.

SHOVELS

WOOD'S MO-LYB-DEN-UM OR "MOLY"

RUGGEDNESS — From the ROCKIES — MOLY Shovels Outwear All Others. Magic Mo-Lyb-Den-Um, the Miracle Mineral, mined in the **Colorado Rockies,** gives Moly shovels, spades and scoops a rugged toughness that even outwears that of the granite peaks among which Mo-Lyb-Den-Um is found.

Buy these stronger, tougher shovels and watch your shovel costs go down. Moly means more wear. **Unconditionally guaranteed to outlast and outwear all others.**

Molybdenum Super Steel Shovels with the Following Outstanding Features:

Hardness—Every shovel shows a Brinell hardness of 460 to 512, this range has been proven to show the least abrasive wear; blades harder or softer are rejected.

Toughness—This quality is as essential as hardness. Moly shovels are guaranteed not to crack or split in service. Blades are not brittle.

Strength—Moly 14 gauge steel is stronger than 12 gauge carbon steel.

Factory Test—The testing machine hold 2 in. and 4 in. red granite blocks. Moly and other shovels are fastened to the spindle and rotated through the granite. Moly shovel went through 80 miles of granite, lifted 3,485 tons and was still serviceable. The best test of a competitive shovel was 15 miles, lifting approximately 700 tons, before going out of commission.

Sledge Hammer Test—A Moly scoop placed on the floor and swung on with a sledge hammer—hit with all the might of a husky man—this terrific wallop would have cracked most any other scoop didn't even dent the Moly scoop.

STUART BRAND — "B" GRADE

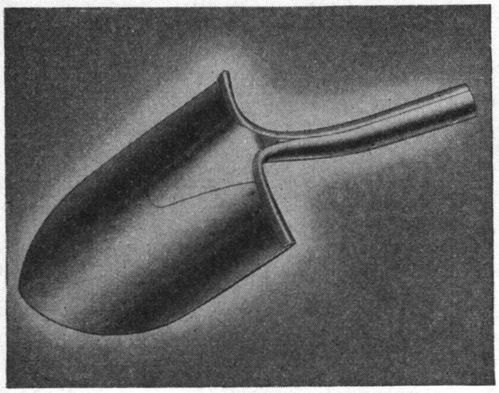
Special analysis high carbon steel — heat treated. A high grade product in medium-price field.

PIQUA BRAND — "C" GRADE

These shovels, spades and scoops are made to deliver outstanding service **for agricultural and general use. Blades are heat treated high carbon steel.**

WILSON BRAND — SPECIAL "C" GRADE

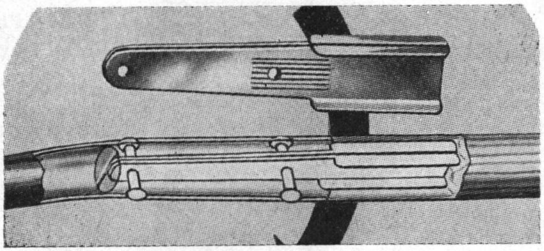
Leads the **low-priced field** on any basis. **Blades are heat treated high carbon steel.** Made only in open back construction.



Closed Back

In this type of construction, blade and socket are formed from one piece of sheet steel, thereby permitting heat treating both blade and socket. The shovel blade and frog are strengthened by a steel backbone plate, welded into the back of the blade. This plate makes the back of the blade smooth. Rolled shoulders stiffen and strengthen blade and provide a non-cutting edge or step for the worker's shoe.

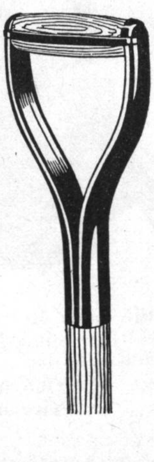
The closed back feature makes available a shovel that combines the good features of the welded strap, the hollow back and the solid shank shovels, and overcomes the disadvantages of each.



The two members of the Steel I-Beam are inserted in the slot in the handle.

Steel I-Beam Handle Reinforcement

Adds a minimum of 30% more strength in the section above socket where 65% of handle breaks occur. Gives lightest and strongest reinforcement—yet retains all resiliency and flexing ability needed for full efficiency.



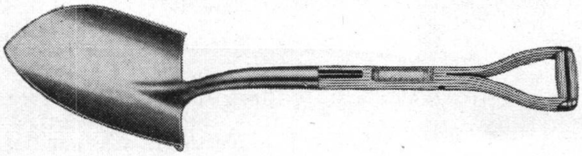
Steel Moly Split D Handle

This is the strongest and most comfortable shovel handle made. A steel band compresses the prongs and spool of the handle assembly into a solid handle unit which never slips, gives or moves. The grip never checks or splits and there are no rivets to become loose.

A four-inch finger space gives extra comfort to the hand of the user.

SHOVELS

D HANDLE, ROUND POINT

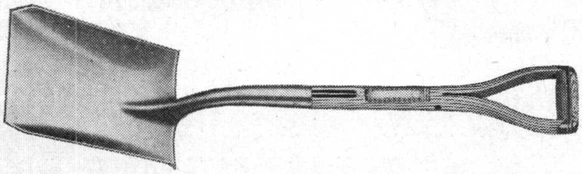


Black Blade, Heat Treated, Polished Socket

Steel banded Moly Split D handle.

	Closed Back		Open Back	
	Molybdenum Super Steel	Piqua Brand "C" Grade	Piqua Brand "C" Grade	Wilson Brand Spec. "C" Grade
Nos.	3W2CB	3C2CB	03C2	3C2TS
Size	2	2	2	2
Blade, in.	9x12½	9x12½	9x12½	9x12½
Gauge steel	14	15	15	15
Style handle	I-beam	Plain	Plain	I-beam
Length hdle., in.	22½	22½	28	28
Repair hdle., Nos.	D1	D2	D3½	D3
Wt. dozen, lbs.	50	54	51	52
Per dozen	$49.80	33.50	29.70	31.00

D HANDLE, SQUARE POINT

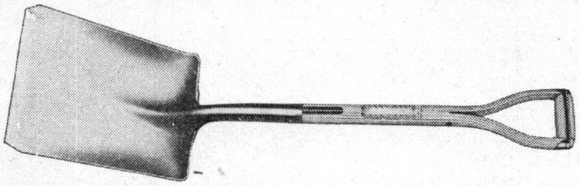


Black Blade, Heat Treated, Polished Socket

Steel banded Moly Split D handle.

	Closed Back		Open Back	
	Molybdenum Super Steel	Piqua Brand "C" Grade	Piqua Brand "C" Grade	Wilson Brand Spec. "C" Grade
Nos.	2W2CB	2C2CB	02C2	2C2TS
Size	2	2	2	2
Blade, in.	9¾x12	9¾x12	9¾x12	9¾x12
Gauge steel	14	15	15	15
Style handle	I-beam	Plain	Plain	I-beam
Length hdle., in.	22½	22½	28	28
Repair hdle., Nos.	D1	D2	D3½	D3
Wt. dozen, lbs.	63	57	54	54
Per dozen	$49.80	33.50	29.70	31.00

D HANDLE, SQUARE POINT, CONCRETE OR ORE



Black Blade, Heat Treated, Polished Socket

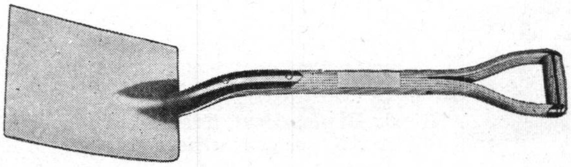
Steel banded Moly Split D, 30 in. I-beam handle.

	Open Back		Open Back
	Molybdenum Super Steel		Stuart Brand "B" Grade
Nos.	OW4	OW6	OB4
Size	4	6	4
Blade, in.	11x13	12x14	11x13
Gauge steel	14	14	14
Repair hdle., Nos.	D4	D4	D5
Wt. dozen, lbs.	65	69	64
Per dozen	$47.40	49.40	34.30

All above, one-half dozen in a bundle.

SHOVELS

D HANDLE, MOULDERS



Black Blade, Heat Treated, Polished Socket

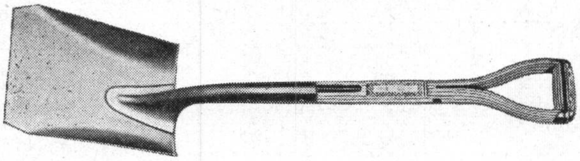
Steel banded Moly Split D, 22½ in. I-beam handle. Polished face.

	Closed Back Molybdenum Super Steel
No.	S9W2CBX
Size	2
Blade, in.	10x12
Gauge steel	15
Repair hdle., No.	D1
Wt. dozen, lbs.	59
Per dozen	$55.80

Per dozen

No. MRP9W2CBX—Same as No. S9W2CBX above, except with rubber pein D-handle $83.16

D HANDLE, SQUARE POINT TRACK

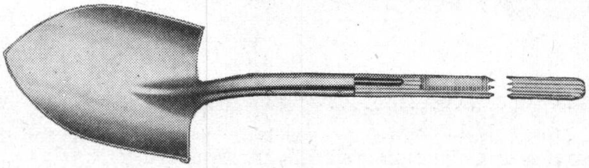


Black Blade, Heat Treated, Polished Socket

Steel banded Moly Split D, 22½ in. I-beam handle.

	Closed Back Molybdenum Super Steel
No.	2W2CBT
Size	2
Blade, in.	9¾x12
Gauge steel	13
Repair hdle., No.	D1
Wt. dozen, lbs.	72
Per dozen	$51.80

LONG HANDLE, ROUND POINT



Black Blade, Heat Treated, Polished Socket

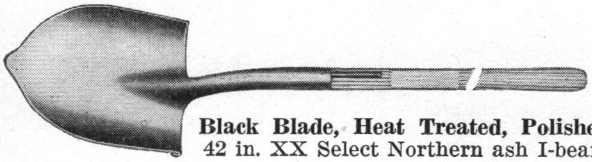
Northern Ash handle.

	Closed Back	Closed Back	Open Back
	Molybdenum Super Steel	Piqua Brand "C" Grade	Wilson Brand Spec. "C" Grade
Nos.	5W2CBLW	5C2CB	5C2TS
Size	2	2	2
Blade, in.	8⅞x11¾	9x12	9x12
Gauge steel	16	15	15
Style handle	I-beam	Plain	I-beam
Grade handle	XX	No. 1	No. 1
Length hdle., in.	43	43	48
Repair hdle., Nos.	L11	L12	L14
Wt. dozen, lbs.	53	57	55
Per dozen	$49.80	33.50	31.00

All above, one-half dozen in a bundle.

SHOVELS

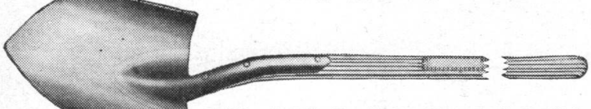
LONG HANDLE, ROUND POINT, MINING, "MUCKERS"



Black Blade, Heat Treated, Polished Socket
42 in. XX Select Northern ash I-beam handle.

	Closed Back **Molybdenum Super Steel**
No.	**5W2CB-MAP**
Size	2
Blade, in.	9x12
Gauge steel	14
Repair handle, No.	L12½
Wt. dozen, lbs.	59
Per dozen	$49.80

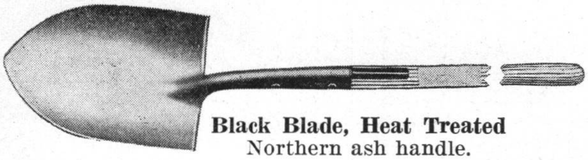
LONG HANDLE, ROUND POINT, MINING BEND, HALF SPRING



Black Blade, Heat Treated, Polished Socket
50 in. X Northern ash handle.

	Strap or Plain Back **Stuart Brand "B" Grade**
No.	**204B-AP**
Size	2
Blade, in.	9½x12
Gauge steel	16
Repair handle, No.	L17
Wt. dozen, lbs.	58
Per dozen	$35.80

LONG HANDLE, ROUND POINT, IRRIGATING



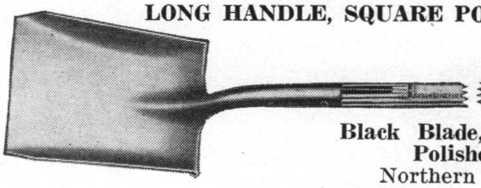
Black Blade, Heat Treated
Northern ash handle.

	Closed Back	Solid Shank	
	***Molybdenum Super Steel**	**Bantam**	**Brand**
Nos.	**WICBLW**	**1B-1**	**1B-2**
Size	1	1	2
Blade, in.	8x11	8x11	8¾x11½
Gauge steel	16	16	16
Style handle	I-beam	Plain	Plain
Length handle, in.	43	44½	44½
Repair handle, Nos.	L10	L18	L18
Wt. dozen, lbs.	49	47	50
Per dozen	$49.80	24.80	24.80

*This Moly grade shovel is specially recommended for Public Service construction and distribution trucks.

SHOVELS

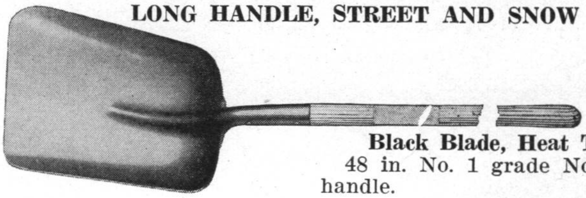
LONG HANDLE, SQUARE POINT



Black Blade, Heat Treated, Polished Socket
Northern ash handle.

	Closed Back		Open Back	
	Molybdenum Super Steel	**Piqua Brand "C" Grade**	**Piqua Brand "C" Grade**	**Wilson Brand Spec. "C" Grade**
Nos.	**4W2CB**	**4C2CB**	**O4C2**	**4C2TS**
Size	2	2	2	2
Blade, in.	9¾x12	9¾x12	9¾x12	9¾x12
Gauge steel	14	15	15	15
Style handle	I-beam	Plain	Plain	I-beam
Grade handle	XX	No. 1	No. 1	No. 1
Length handle, in.	43	43	48	48
Repair handle, Nos.	L10	L12	L15	L14
Wt. dozen, lbs.	67	60	57	58
Per dozen	$49.80	33.50	29.70	31.00

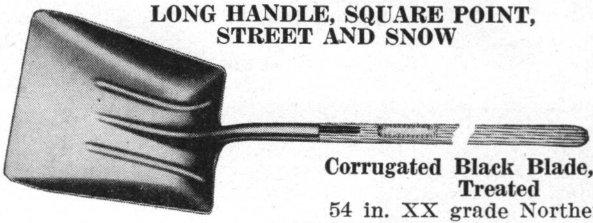
LONG HANDLE, STREET AND SNOW



Black Blade, Heat Treated
48 in. No. 1 grade Northern ash handle.

	Open Back **Piqua Brand "C" Grade**
No.	**LCSS1**
Size	2
Blade, in.	11¼x14¼
Gauge steel	16
Repair handle, No.	L16
Wt. dozen, lbs.	62
Per dozen	$19.40

LONG HANDLE, SQUARE POINT, STREET AND SNOW



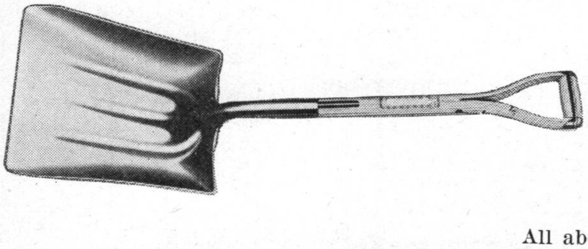
Corrugated Black Blade, Heat Treated
54 in. XX grade Northern ash I-beam handle.

Withstand abrasive wear of concrete and asphalt—break up ice formations.

	Open Back **Molybdenum Super Steel**
No.	**LW172CX**
Size	2
Blade, in.	13½x14½
Gauge steel	17
Repair handle, No.	L13
Wt. dozen, lbs.	65
Per dozen	$54.60

D HANDLE, SQUARE POINT, COAL

Black Blade, Heat Treated, Polished Socket



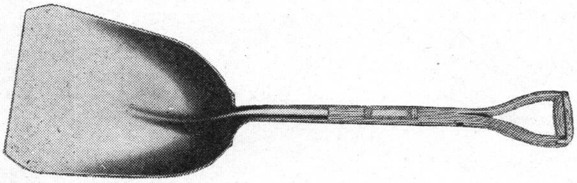
30 in. steel banded Moly Split D handle.
The old "Gold Bug Pattern"—the stiffest, strongest blade possible to make.

	Open Back			
	Molybdenum Super Steel		**Piqua Brand "C" Grade**	
Nos.	**W172TC**	**W174TC**	**C172TC**	**C174TC**
Size	2	4	2	4
Blade, in.	13½x14½	14½x15½	13½x14½	14½x15½
Gauge steel	17	17	17	17
Style handle	I-beam	I-beam	Plain	Plain
Repair handle, Nos.	D4	D4	D6	D6
Wt. dozen, lbs.	63	69	60	66
Per dozen	$54.60	56.60	35.40	37.40

All above, one-half dozen in a bundle.

SCOOPS

D HANDLE, COAL YARD

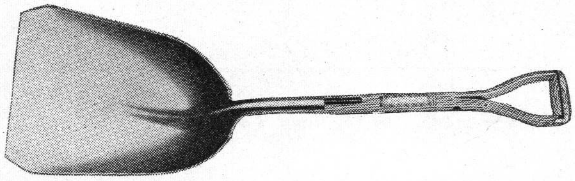


Black Blade, Heat Treated; Polished Socket
Steel banded Moly Split D, 30 in. I-beam handle.

Open Back

	Molybdenum Super Steel	Stuart Brand "B" Grade
Nos.	W138Z	B138Z
Size	8	8
Blade, in.	14½x17	14½x17
Gauge steel	16	16
Repair handle, Nos.	D4	D4
Wt. dozen, lbs.	78	77
Per dozen	$61.80	42.40

D HANDLE, EASTERN PATTERN



Black Blade, Heat Treated, Polished Socket
Steel banded Moly Split D, 30 in. I-beam handle.

Open Back

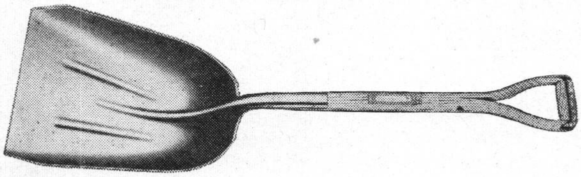
	Molybdenum Super Steel	
Nos.	W82	W84
Size	2	4
Blade, in.	11x14½	11¾x15½
Gauge steel	16	16
Repair handle, Nos.	D4	D4
Wt. dozen, lbs.	64	68
Per dozen	$54.40	56.40

Steel banded Moly Split D, 30 in. plain handle.

Open Back

	Piqua Brand "C" Grade	
Nos.	C82	C84
Size	2	4
Blade, in.	11x14½	11¾x15½
Gauge steel	16	16
Repair handle, Nos.	D6	D6
Wt. dozen, lbs.	61	65
Per dozen	$33.40	35.40

D HANDLE, LIGHTWEIGHT GRAIN



Black Blade, Heat Treated, Polished Socket
Steel banded Moly Split D, 30 in. plain handle.

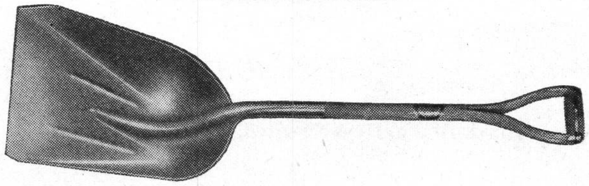
Open Back

	Piqua Brand, "C" Grade			
Nos.	C138LWC	C140LWC	C142LWC	C144LWC
Size	8	10	12	14
Blade, in.	13¾x16¾	14½x17¾	14¾x18¾	15¼x19¾
Gauge steel	17	17	17	17
Repair handle, Nos.	D6	D6	D6	D6
Wt. dozen, lbs.	67	70	74	79
Per dozen	$37.70	38.90	40.10	41.30

All above, one-half dozen in a bundle.

ALUMINUM SCOOPS

D HANDLE, GRAIN

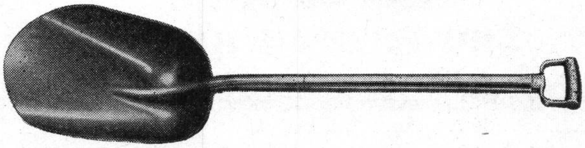


10 Gauge Aluminum Alloy Blade; Heat Treated
Moly Split D handle, 30 in. long, aluminum rivet clips and bands.

Open Back

	Zephyr-Weight	
Nos.	AA140LWC	AA142LWC
Size	10	12
Blade, in.	14½x17¾	14¾x18¾
Repair handle, Nos.	D9	D9
Wt. dozen, lbs.	50	51
Per dozen	$76.20	78.50

D HANDLE, SAUSAGE



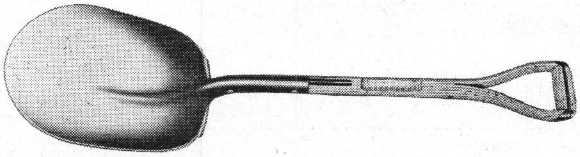
10 Gauge Aluminum Alloy Blade, Heat Treated
All aluminum handle and grip. Non-corrosive and sanitary.

Closed Back

	Round End Pattern
No.	TAA82CBRP
Size	2
Blade, in.	11x15
Wt. dozen, lbs.	42
Per dozen	$109.20

SCOOPS

D HANDLE, SAND OR GRAVEL

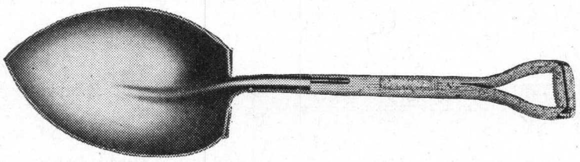


Black Blade, Heat Treated; Polished Socket
Steel banded Moly Split D, 30 in. handle.

Open Back

	Molybdenum Super Steel	Piqua Brand "C" Grade
Nos.	W82RP	C82RP
Size	2	2
Blade, in.	11x15	11x15
Gauge steel	16	16
Style handle	I-beam	Plain
Repair handle, Nos.	D4	D6
Wt. dozen, lbs.	59	57
Per dozen	$54.40	33.40

D HANDLE, BREAKING DOWN



Black Blade, Heat Treated, Polished Socket
Steel banded Moly Split D, 30 in. I-beam handle.

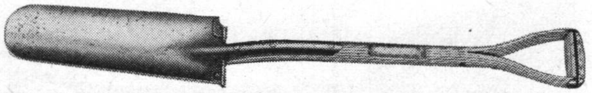
Open Back

	Molybdenum Super Steel	Stuart Brand "B" Grade
Nos.	W135D	B135D
Size	5	5
Blade, in.	11¼x15½	11¼x15½
Gauge steel	15	15
Repair handle, Nos.	D4	D5
Wt. dozen, lbs.	67	66
Per dozen	$57.40	39.70

All above, one-half dozen in a bundle.

DRAIN SPADES

D HANDLE



Black Blade, Heat Treated, Polished Socket
Steel banded Moly Split D handle.

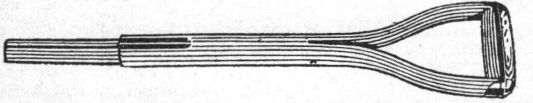
	Closed Back Molybdenum Super Steel	Plain Back Stuart Brand "B" Grade	
Nos.	**702WCB**	**701B**	**702B**
Size	2	1	2
Blade, in.	5¾x16	5¾x14	5¾x16
Gauge steel	14	14	14
Style handle	I-beam	Plain	Plain
Length hdle., in.	22½	30	30
Repair hdle., Nos.	D1	D8	D8
Wt. dozen, lbs.	58	53	56
Per dozen	$54.80	39.50	41.30

One-half dozen in a bundle.

SHOVEL REPAIR HANDLES

For Woods Shovels and Scoops Only

XX indicates highest grade, X intermediate grade, and No. 1 serviceable grade Northern White Ash.



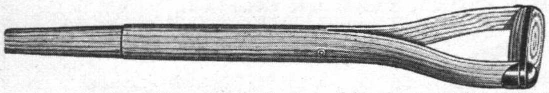
22½ In. Steel Banded Moly Split D, I-Beam

For Molybdenum closed back shovels and spades.

	XX Grade
No.	**D1**
Wt. per dozen, lbs.	15
Per dozen	$13.20

Per dozen

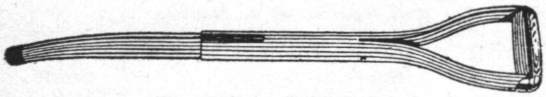
Rubber Pein Handle—For No. MRP9W2CBX moulders' shovels $41.00



22½ In. Steel Banded Moly Split D, Plain

For Piqua Brand closed back shovels. No I-beam.

	No. 1 Grade
No.	**D2**
Wt. per dozen, lbs.	15
Per dozen	$10.20



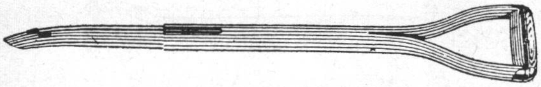
28 In. Steel Banded Moly Split D, I-Beam

For Wilson Brand open back shovels.

	No. 1 Grade
No.	**D3**
Wt. per dozen, lbs.	18
Per dozen	$16.80

28 In. Steel Banded Moly Split D, Plain
For Piqua Brand open back shovels.

	No. 1 Grade
No.	**D3½**
Wt. per dozen, lbs.	17
Per dozen	$14.40



30 In. Steel Banded Moly Split D, I-Beam

For Molybdenum and Stuart Brand open back shovels and scoops.

	XX Grade	X Grade
Nos.	**D4**	**D5**
Wt. per dozen, lbs.	20	20
Per dozen	$17.80	16.20

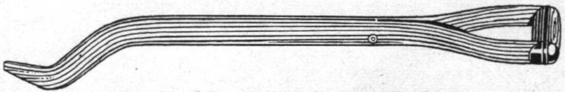
30 In. Steel Banded Moly Split D, Plain
For Piqua Brand open back scoops. No I-beam.

	No. 1 Grade
No.	**D6**
Wt. per dozen, lbs.	20
Per dozen	$13.80

All above handles, one dozen in a bundle.

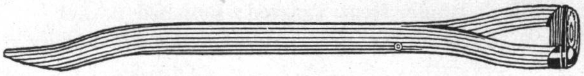
SHOVEL REPAIR HANDLES

For Wood Shovels and Scoops Only



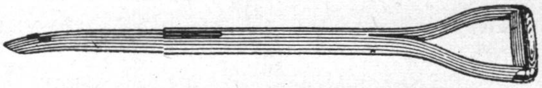
30 In. Steel Banded Moly Split D, Plain
For No. 9W2 Moulders' shovels. No I-beam.

	XX Grade
No.	**D7**
Wt. per dozen, lbs.	21
Per dozen	$15.60



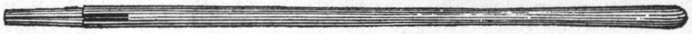
30 In. Steel Banded Moly Split D, Plain
For Nos. 701B and 702B drain spades. No I-beam.

	X Grade
No.	**D8**
Wt. per dozen, lbs.	21
Per dozen	$15.60



30 In. Aluminum Banded Moly Split D, I-Beam
For No. AA140LWC Aluminum scoops.

	XX Grade
No.	**D9**
Wt. per dozen, lbs.	17
Per dozen	$16.80



43 In. Long, I-Beam
For Molybdenum closed back shovels.

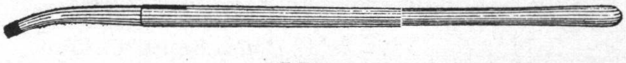
	XX Grade	Light Weight XX Grade
Nos.	**L10**	**L11**
Wt. per dozen, lbs.	20	18
Per dozen	$12.00	12.00

43 In. Long, Plain
For Piqua Brand closed back shovels. No I-beam.

	No. 1 Grade
No.	**L12**
Wt. per dozen, lbs.	20
Per dozen	$7.20

42 In. Long, I-Beam
For No. 5W2CB-MAP Mining shovels.

	XX Grade
No.	**L12½**
Wt. per dozen, lbs.	20
Per dozen	$12.00



I-Beam
For Molybdenum and Wilson Brand open back shovels.

	XX Grade	No. 1 Grade
Nos.	**L13**	**L14**
Length, in.	54	48
Wt. per dozen, lbs.	23	21
Per dozen	$16.20	12.60

48 In. Long, Plain
For Piqua Brand open back shovels. No I-beam.

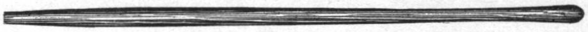
	No. 1 Grade
No.	**L15**
Wt. per dozen, lbs.	21
Per dozen	$11.40

48 In. Long, Plain
For Piqua Brand open back street and snow shovels. No I-beam.

	No. 1 Grade
No.	**L16**
Wt. per dozen, lbs.	21
Per dozen	$11.40

50 In. Long, Mining Bend
For No. 204BAP Mining Bend shovels. No I-beam.

	No. 1 Grade
No.	**L17**
Wt. per dozen, lbs.	20
Per dozen	$15.60



44½ In. Long, Plain
For Nos. IB-1 and IB-2 Irrigating shovels. No I-beam.

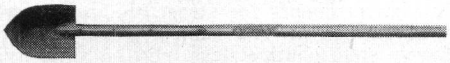
	X Grade
No.	**L18**
Wt. per dozen, lbs.	19
Per dozen	$6.40

All above, one dozen in a bundle.

Replacement handles are exact duplicates of the original handles used in Closed Back Shovels and Spades, and Open Back Shovels, Spades and Scoops.

TELEGRAPH SHOVELS

STRAIGHT PATTERN



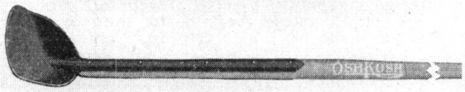
Absolutely straight from end to end. Special high carbon steel blade, 22 inch strap. Selected second growth ash handle.

Nos.	Each	Handle, ft.	Wt. each, lbs.
1033	$ 9.00	8	9
1034	9.80	9	10
1035	10.80	10	11

Open stock.

TELEGRAPH SPOONS

WESTERN PATTERN



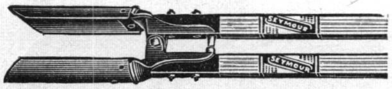
Special high carbon steel blade, 22 inch strap. Selected second growth ash handle.

Nos.	Each	Handle, ft.	Wt. each, lbs.
1024	$ 9.50	8	10
1025	10.30	9	11
1026	11.30	10	12

Open stock.

POST HOLE DIGGERS

ATLAS



High Carbon Steel Blades

Blades riveted to heavy shouldered forged steel frame with heavy double hinges operating on a steel bolt. Northern hardwood handles with square butts, bolted into sockets.

Blades and frame lacquered bright red, handles sanded and lacquered.

Per dozen

Atlas—9¼ in. blades; 4 ft. handles; wt. per dozen 111 lbs. **$44.00**

One-sixth dozen in a bundle.

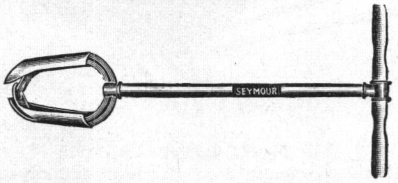
Per pair

Extra Handles—4 ft. long; wt. per pair 3½ lbs. **$1.25**

Open stock.

POST HOLE AUGERS

IWAN PATTERN



Heavy Gauge Alloy Steel Blades

Blades held together at center points by a riveted strap preventing blades from spreading out of line.

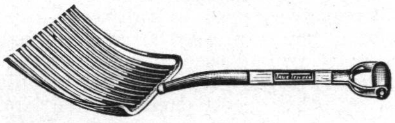
1 in. diam. steel shaft, 33 in. long; steel tee; hardwood cross handle.

Size, in.	Per dozen	Wt. per dozen, lbs.
4	**$44.00**	82
6	**48.00**	102
7	**50.00**	106
8	**50.00**	115

One-sixth dozen in a bundle.

COKE FORKS

TRUE TEMPER



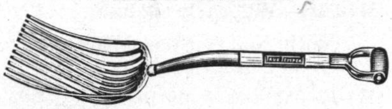
Bent D Handle

Head forged from highest grade selected fork steel. 17 in. black diamond shape tines. 30 in. fire hardened ash handle with TT steel D top; tubular ferrule.

Nos.	710	712
No. of tines	10	12
Width at center, in.	15	18
Space between tines, in.	1¼	1¼
Repair hdle., Nos.	TTC	TTC
Wt. dozen, lbs.	96	107
Per dozen	$55.80	61.80

COAL SCOOP FORKS

TRUE TEMPER



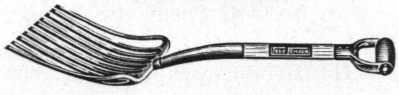
Bent D Handle

Forged highest grade selected fork steel head; black finish round tines. 30 in. fire hardened ash handle, with TT steel D top; tubular ferrule.

Nos.	1010R	1012½R	1014R
No. of tines	10	12	14
Length tines, in.	15	16	15
Width at center, in.	14	15	14
Space between tines, in.	1¼	1	¾
Repair hdle., Nos.	TTC	TTC	TTC
Wt. dozen, lbs.	83	98	100
Per dozen	$55.80	61.80	65.80

STONE OR BALLAST FORKS

TRUE TEMPER



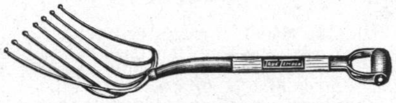
Bent D Handle

Head forged from highest quality fork steel. Black finish square tines. 30 in. fire hardened ash handle with TT steel D top; tubular ferrule.

Nos.	98S	100SC
No. of tines	8	10
Length tines, in.	13½	11
Width at center, in.	10½	9½
Space between tines, in.	1⅛	¾
Repair hdle., Nos.	TTC	TTC
Wt. dozen, lbs.	83	79
Per dozen	$51.80	55.80

BEET FORKS

TRUE TEMPER



Scoop Shape; Bent D Handle

Head forged from finest fork steel. Black round tines with ball points. 32 in. fire hardened ash handle with IDL steel top; tubular ferrule.

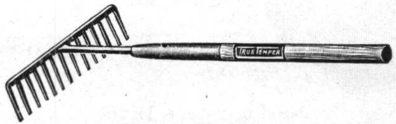
Per dozen

No. 037S—7 tines, 16½ in. long; 13¾ in. wide at center, 2 in. space between tines; repair hdle. No. TIB; wt. doz. 80 lbs..**$42.80**

All above, one-quarter dozen in a bundle.

ASPHALT RAKES

TRUE TEMPER



Heavy Pattern

Regular drop shank pattern.

Forged head with 18 in. square forged shank. 5 ft. ash handle.

3⅞ in. straight teeth.

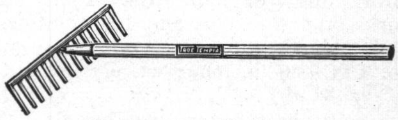
Per dozen

No. 1014H—14 teeth, 16½ in. wide, repair hdle. No. TA5; wt. per dozen 78 lbs. **$41.20**

One-half dozen in a bundle.

ROAD RAKES

TRUE TEMPER



Heavy Forged Head

3½ in. heavy straight teeth; black finished head. 5½ ft. fire hardened ash handle; long plain ferrule.

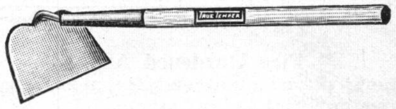
Per dozen

No. X14—14 teeth, 15½ in. wide, repair hdle. No. TRR5½; wt. per dozen 51 lbs. **$29.20**

One-half dozen in a bundle.

MORTAR HOES

TRUE TEMPER



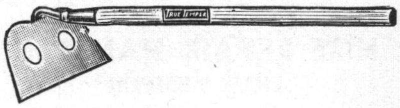
Plain Blade, Shank Pattern

One-piece forged from finest analysis hoe steel; bright finish blade. 5½ ft. fire hardened ash handle; tubular ferrule.

Per dozen

No. 10—Blade 10 in. wide, 6 in. deep; repair hdle. No. TA5½; wt. per dozen 49 lbs. **$29.20**

One-half dozen in a bundle.



Two-Hole Blade; Shank Pattern

Forged from highest grade selected hoe steel; bright finish blade. 5½ ft. fire hardened ash handle; tubular ferrule.

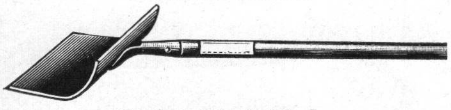
Per dozen

No. M210—Blade 10 in. wide, 6 in. deep; repair hdle. No. TA5½; wt. per dozen 48 lbs. **$29.20**

One-half dozen in a bundle.

SNOW PUSHERS

LITTLE GIANT



Spring Steel Blade

One-piece 16 gauge high carbon steel blade, standard curve. Socket riveted to blade.

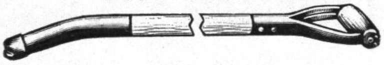
Per dozen

No. 18—18x12 in. blade, 48 in. handle; wt. per dozen 76 lbs. $14.00

One-quarter dozen in a bundle.

FORK REPAIR HANDLES

TRUE TEMPER



True Temper Steel D Top

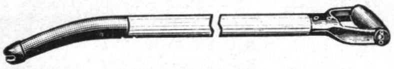
Fire hardened ash; tubular ferrule and cap. 1½ in. diameter.

For Nos. 710 and 712 Coke Forks, Nos. 1010R, 1012½R and 1014R Coal Scoop Forks, and Nos. 98S and 100SC Stone or Ballast Forks.

Per dozen

No. TTC—30 in. long; wt. per dozen 31 lbs. $10.40

One-half dozen in a bundle.



IDL Steel Top

Fire hardened ash; tubular ferrule and cap. 1½ in. diameter.

For No. 0375 Beet Fork.

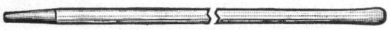
Per dozen

No. TIB—32 in. long; wt. per dozen 30 lbs. $10.40

One-half dozen in a bundle.

RAKE REPAIR HANDLES

TRUE TEMPER



Fire Hardened Ash

Long plain round end ferrule. Largest diameter $1\frac{3}{32}$ in.

For No. X14 Road Rake.

Per dozen

No. TRR5½—5½ ft. long; wt. per dozen 26 lbs. $10.80

Fire Hardened Ash

Round end tubular ferrule. Largest diameter $1\frac{3}{32}$ in.

For No. 1014H Asphalt Rake.

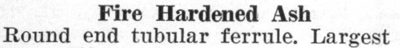
Per dozen

No. TA5—5 ft. long; wt. per dozen 27 lbs. $10.80

One-half dozen in a bundle.

HOE REPAIR HANDLES

TRUE TEMPER



Fire Hardened Ash

Round end tubular ferrule. Largest diameter $1\frac{3}{32}$ in.

For Nos. 10 and M210 Mortar Hoes.

Per dozen

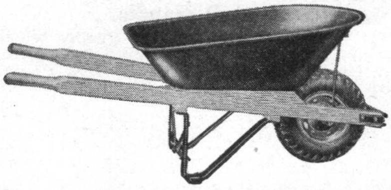
No. TA5½—5½ ft. long; wt. per dozen 29 lbs. $12.00

One-half dozen in a bundle.

WHEELBARROWS

JACKSON CONCRETE, DEEP

Extensively used by railroads, city and state governments for street and road construction. Trays pressed from high carbon sheets and are heavier than generally used; reinforced around the edges with steel rods. Heavy steel channel legs, riveted securely, with full bearing surface on the handles, fitted with special steel shoes. Trays painted blue, all other metal parts painted black.



Wood Frame, Deep, Round Front, for Wet Materials

Heaped capacity 4 cu. ft.; even full capacity 3 cu. ft.; 15 gauge tray; 61 in. long over all, 27¼ in. wide over all; 25½ in. high over all.

With No. 24B Pneumatic Wheel

4.00x8 in., 4 ply, roller bearing.

Each

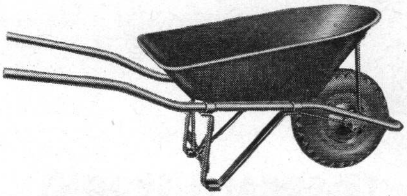
No. M4-24B—Wt. each 66 lbs. $31.10

With No. 12 Steel Wheel

16x1¾ in.

Each

No. M4-12—Wt. each 68 lbs. $17.40



All Steel Frame, Deep, for Wet Materials

Heaped capacity 4 cu. ft.; even full capacity 3 cu. ft.; 15 gauge tray; 65 in. long over all; 27¼ in. wide over all; 25½ in. high over all.

With No. 24B Pneumatic Wheel

4.00x8 in., 4 ply, roller bearing.

Each

No. S4-24B—Wt. each 75 lbs. $32.05

With No. 12 Steel Wheel

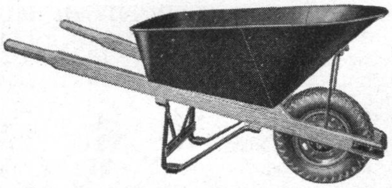
16x1¾ in.

Each

No. S4-12—Wt. each 77 lbs. $18.35

JACKSON CONCRETE, NARROW DEEP

For use where narrow trays of large capacity are required. Straight sided construction, increased depth in the rear. Pressed trays of exclusive design with three thicknesses of steel at folds, absolutely water-tight; reinforced around edges with steel rods.



Wood Frame, Narrow Deep, Round Front, Large Capacity

Heaped capacity 5 cu. ft.; even full capacity 4 cu. ft.; 16 ga. tray; 61 in. long over all; 25 in. wide over all; 29 in. high over all.

With No. 24B Pneumatic Wheel

4.00x8 in., 4 ply; roller bearing.

Each

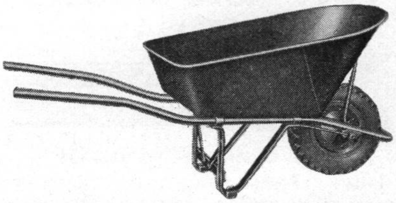
No. M11-24B—Wt. each 72 lbs. ...$33.30

With No. 13 Steel Wheel

16x2 in.

Each

No. M11-13—Wt. each 76 lbs. $19.90



All Steel Frame, Narrow Deep, Large Capacity

Heaped capacity 5 cu. ft.; even full capacity 4 cu. ft.; 16 ga. tray; 68 in. long over all; 25 in. wide over all; 29 in. high over all.

With No. 24B Pneumatic Wheel

4.00x8 in., 4 ply; roller bearing.

Each

No. S11-24B—Wt. each 83 lbs. $34.25

With No. 13 Steel Wheel

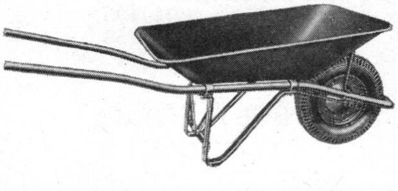
16x2 in.

Each

No. S11-13—Wt. each 87 lbs. $20.85

JACKSON GENERAL PURPOSE

All steel barrows for use around mills, mines, railroads, industrial and power plants. Especially adapted for moving coal, coke, ashes and other bulky materials.



All Steel, Large Capacity

Heaped capacity 4 cu. ft.; level full capacity 3 cu. ft.; 16 ga. tray; 65 in. long over all; 28½ in. wide over all; 21 in. high over all.

With No. 24B Pneumatic Wheel

4.00x8 in., 4 ply; roller bearing.

Each

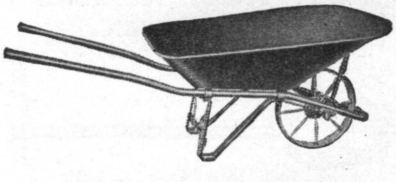
No. T5-24B—Wt. each 72 lbs. $30.50

With No. 12 Steel Wheel

16x1¾ in.

Each

No. T5-12—Wt. each 74 lbs. $16.80



All Steel, Large Capacity

Heaped capacity 6 cu. ft.; level full capacity 5 cu. ft.; 15 ga. tray; 68 in. long over all; 33 in. wide over all; 25 in. high over all.

With No. 24B Pneumatic Wheel

4.00x8 in., 4 ply; roller bearing.

Each

No. T8-24B—Wt. each 85 lbs. $32.90

With No. 13 Steel Wheel

16x2 in.

Each

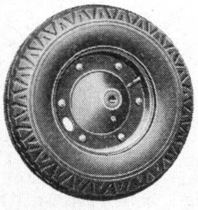
No. T8-13—Wt. each 89 lbs. $19.50

Shipped knocked down and bundled; trays and legs nested.

All above, open stock.

WHEELBARROW WHEELS

JACKSON PNEUMATIC



4.00x8 in., 4 Ply, Roller Bearing

16 in. outside diameter; disc type; with inner tube.

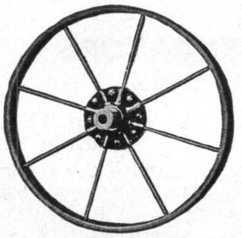
For 55 lbs. pressure. Hub 7 in. long, ⅝ in. bore.

2 ply tires are too light and puncture too easily. Likewise, plain or ball bearing, while cheaper, are not satisfactory for industrial use. We only recommend 4 ply, roller bearing.

	Each
No. 24B—Wt. each 12 lbs.	$16.20

Open stock.

JACKSON STEEL



Eight 7/16 in. Round Spokes

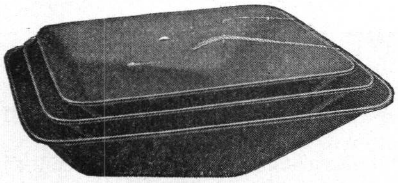
Hub 7 in. long, ⅝ in. bore.

Nos.	12	13
Diam., in.	16	16
Tires, in.	1¾x5/16	2x⅜
Wt. each, lbs.	13¾	16
Each	$2.50	2.80

Open stock.

WHEELBARROW TRAYS

JACKSON



High Carbon Steel

Pressed, reinforced with continuous wire rods. Designed to handle concrete or mortar with minimum effort.

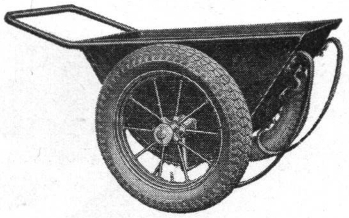
For barrows, Nos.	**M4-S4**	**M11-S11**
Heaped cap., cu. ft.	4	5
Length, in.	37½	38
Width, in.	27¾	25
Gauge	15	16
Wt. each, lbs.	28	33
Each	$7.55	10.60

For barrows, Nos.	**T5**	**T8**
Heaped cap., cu. ft.	4	6
Length, in.	36	42
Width, in.	28½	33¼
Gauge	16	15
Wt. each, lbs.	23	33
Each	$6.25	9.20

Open stock.

CONCRETE CARTS

JACKSON



Rocker Dump

Perfectly balanced and will dump as readily as carts with larger diameter wheels. Will not roll back on operator.

Bodies are riveted from 14 gauge steel with top edges welded to 1 in. pipe handles. Front reinforced with 2x¼ in. bar steel. Pencil roller bearing wheels. 5 in. hubs. Heavy bar steel legs, 1¼ in. high carbon steel drop axles.

4.00x18 Two Ply Pneumatic Tires

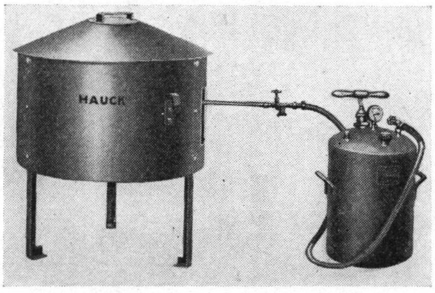
26 in. outside diameter.

	Each
No. 8-88—Heaped cap. 8 cu. ft., even full cap. 6½ cu. ft., 58 in. long over all, 37 in. wide over all, 27 in. high over all, body 41x21x21½ in. deep inside; wt. each 205 lbs.	$99.75

Open stock.

SALAMANDERS

HAUCK, SINGLE



Oil Burning

Heavy duty construction; efficient and economical. Flue connection in cover.

Complete equipment consists of heating chamber; circular flame burner; with oil needle valve strainer; 6 ft. length oil resisting hose with union; heavy welded steel fuel tank, guaranteed for 100 lbs. working pressure and fitted with heavy brass hand pump, 100 lb. pressure gauge, hand-tite filler cap with air release and tank oil needle valve.

Nos.	**223-12**	**223-15**
Heats space, sq. ft.	1200	1900
Diam. heating chamber, in.	20	25
Ht. over all, in.	41½	48½
Burner, Nos.	71	72
Burns gal., per hour	1	2
Cap fuel tank, gals.	12	15
Ship. wt. each, lbs.	150	165
Each	$71.50	74.50

For Bottle Gas

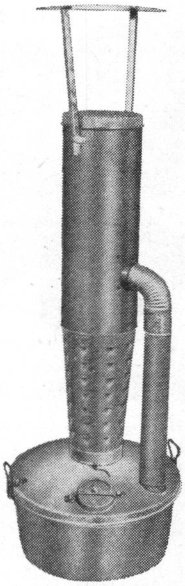
With high pressure inspirator type horizontal flame burner with retain-a-flame nozzle, valve, pressure gauge and 10 ft. of gas hose.

Nos.	**223-12BG**	**223-15BG**
Wt. each, lbs.	88	105
Each	$71.50	74.50

One in a box.

SALAMANDERS

HY-LO



Oil Burning

Here is the perfect answer to all temporary spot and space heating problems. Provide all-purpose portable heat for comfortable working conditions during freezing weather inside or out-of-doors.

Hy-Lo's 100,000 Btu heating capacity is unsurpassed for all heating purposes, and its low cost makes it a money saver on all construction jobs.

Simple to operate; require practically no attention; light with a match; easily regulated; simple to extinguish. There are no wicks, valves, jets, or pressures to worry about. The bowl when filled will burn 10 to 20 hours.

	Each
Hy-Lo—62¾ in. high over all including diffusion hood, 19 in. diam. bowl, cap. 10 gals., net wt. each 27 lbs.; ship. wt. 29¼ lbs.	$22.50

One in a box.

WEED AND UTILITY BURNERS

HUDSON SIMPLEX

Oil Burning

Unequalled for killing weeds and scores of other uses, such as preheating engines for easy starting, winter thawing jobs, snow melting, etc.

Powerful oval flame spreads to a width of 24 in. at point of maximum effectiveness.

The super-flame is extremely hot and cannot be put out by wind or rain in any position.

Burns kerosene, distillate or white gasoline.

Easily cleaned replaceable jet. Pre-heating coil of seamless drawn annealed steel will never corrode or form inside scale.

Super-flame burner has a long lightweight handle. Balances nicely for one-hand performance. Lightweight burner head.

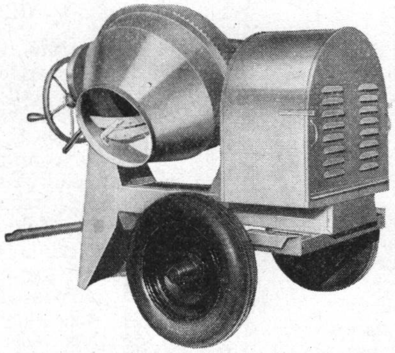
Galvanized tank has an interior locking pump seal and releases air pressure without releasing pump. Has easy-to-read built-in 100 lb. pressure gauge.

	Each
No. 711A—Wt. each 21 lbs.	$22.40

One in 2 cartons.

CONCRETE MIXERS

GILSON "MORSPEED" TILTING DRUM MODELS



Two-Wheel Trailer, Gasoline Engine Powered, Side Discharge

Popular mixers built to resist the abuse and wear of years of service. Simplicity combined with rugged construction makes these unequalled for high-capacity, trouble-proof mixing units.

Cone type drum with semi-steel counterbalanced bottom and heavy sheet steel top. Yoke is cast semi-steel I-beam section. Tilting is by hand-wheel; internal gear; friction drum lock holds drum in any position. Drum drive is by steel roller chain operating on cut steel sprockets; Timken roller bearings. Four mixing blades, two shovel and two cutting.

Roller bearing steel disc wheels with pneumatic tires.

Models	**3-T-PT**	**3½-ST-PT**	**6-T-PT**
Cap., wet material, cu. ft.	3	3½	6
Air-cooled engine, HP	2	4	*6
Inside diam. drum, in.	25	31	38
Inside height drum, in.	26	26	34
Length over all, in.	75	79	96
Height over all, in.	56	61	72
Width over all, in.	48	57	48
Wt. each, lbs.	750	975	1850
Each	$342.00	438.00	695.00

*Also available with 5 HP horizontal hopper-cooled engine.

GILSON JUNIOR "MORSPEED" TILTING DRUM MODELS

GILSON
Morspeed

Two-Wheel Trailer, Gasoline Engine Powered, End Discharge

Every Junior "Morspeed" is made to be the finest mixer offered, with sturdy electric welded steel frames and long life cast iron drum bottoms and yokes. They are easy to charge and the discharge height permits discharging directly into forms or into a wheelbarrow.

Sturdy steel tilting lever.

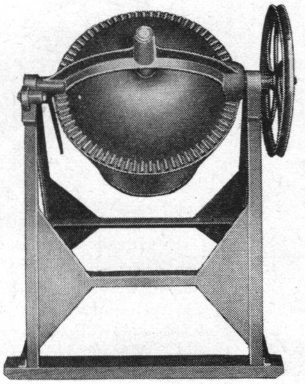
Four mixing blades.

Each

No. 2½-T-ED—Cap. 2½ cu. ft. wet material, 1 HP engine, 24 in. inside drum diam., 28 in. inside drum height, 4.00x8 pneumatic tires, 60 in. high over all, 47 in. wide over all, 36 in. long over all; wt. each 300 lbs. $184.80

CONCRETE MIXERS

GILSON JUNIOR "MORSPEED" TILTING DRUM MODELS



Wood Skid Mounting, 12x3 in. Flat Belt Pulley

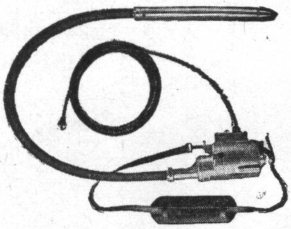
The Junior "Morspeed" mixers' basic superiority is due to their easy tilting discharge. The deep, well rounded cast iron bottom is the secret for this effortless discharge. The center of gravity of the load is considerably nearer the center of the drum yoke and that means easier tilting.

A 20 in. V-pulley for 1750 RPM electric motor drive or a 20x2 in. flat belt pulley for high speed gas engine available as optional equipment.

Models	**2-T-WS**	**3-T-FWS**
Cap. wet material, cu. ft.	2	3
Drum diam., inside, in.	22	25
Drum height, inside, in.	24	26
Height over all, in.	54	63
Width over all, in.	24	32
Length over all, in.	32	52
Wt. each, lbs.	185	290
Each	$56.00	109.80

CONCRETE VIBRATORS

BERG PORTABLE



For the Internal Vibration of Concrete

Recommended for walls, columns, pavements, and other construction.

The Model V2 vibrator unit is 2 in. in diameter and 19 in. long over all; weight 9½ lbs. Complete with 5 or 10 ft. flexible shaft with casing (as specified).

The Model AS motor unit has a universal motor for DC or single phase 60 cycle AC, 110 or 220 volts (as specified). Suspended around operator's shoulders. Complete with rubber cord and plug for light socket connection.

Each

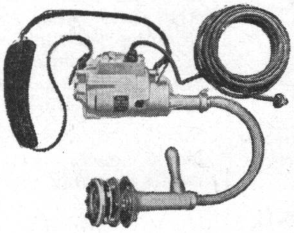
Model V2-AS—Consists of a Model V2 vibrator unit and a Model AS motor unit, as described above; wt. each 61 lbs. ....$.....

One in a box.

Prices on Request

CONCRETE SURFACERS

BERG



For Surfacing and Finishing All Concrete Construction

Consists of straight tool head with cutter plate, carbo disc and accessories; 3 ft. flexible shaft with casing and Model A motor unit. The Universal motor operates on DC or single phase, 60 cycle AC, 110 or 220 volts as specified. Complete with 15 ft. cable and attachment plug.

Each

Model A—Complete as described above; wt. each 45 lbs.$......

One in a box.

Note—Also available in several designs with right angle heads, right angle waterfeed heads, and right angle cylinder heads.

Attachments

Each

Flexible Disc Sander—For use with abrasive sanding discs and felt polishing pads ....$.....

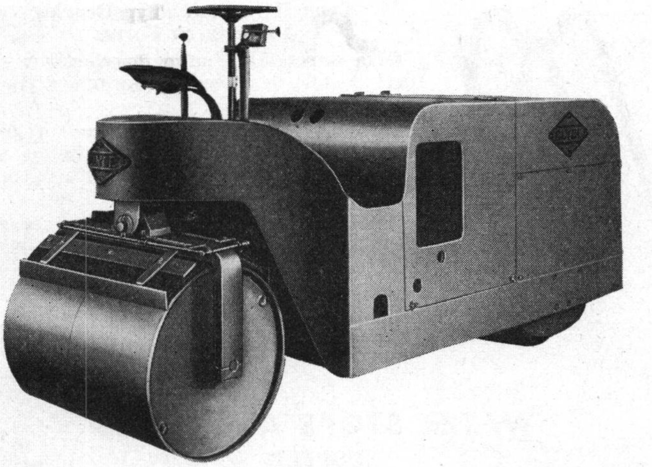
Wire Brush Attachment—For use with wire cup brushes .. ..

Mandrel Attachment—For use with wire radial brushes and canvas buffers ....

Prices on Request

POWER ROLLERS

CLYDE MODEL 80



3-4 Ton Variable Weight—107 to 155 lbs.

Compaction—Rolls to 1 in. of Wall—Clear Vision for Operator

The new, Clyde Model 80 Roller is a compact, exceptionally rugged machine; carefully engineered to provide better and smoother rolling results.

Its automotive-type steering mechanism gives constant control with a minimum of effort.

Work being done is always in clear vision from a comfortable position in operator's seat.

Easy acting band friction clutches permit instant travel direction change, smoothly and quietly.

Hand tamping is eliminated. Model 80 can roll against curbs 9 in. high and within 1 in. of wall on operator's side.

Specifications

Internal expanding, trouble free, band friction clutch permits instant travel direction change without shifting gears.

Automotive type steering mechanism with roller bearing on king pin provides easy operation and less operator's fatigue.

Ball bearings on axles results in easy operation and less maintenance.

Water tank and spray equipment for asphalt work are included with two cocoa mats on each roller.

Strong, foot operated brake on clutch shaft. Plate and angle construction welded into an exceptionally sturdy unit.

Power—4-cylinder water-cooled gas engine.

Compression—Without water, 107 lbs.
With water, 155 lbs.

Total Weight—Empty, 6410 lbs.
Filled, 9000 lbs.

Over All Length—125 in.

Over All Width—49½ in.

Water Tank Capacity—80 gals.

Fuel Tank Capacity—10 gals.

Size Compression Rollers—36 in. diam.
42 in. long.

Size Guide Rollers—28 in. diam.
42 in. long.

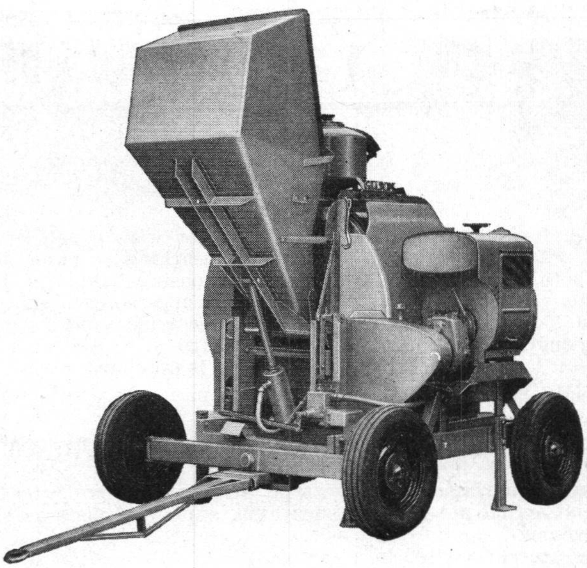
Travel Speed—Governed Speed to 2.44 miles per hour.

	Each
Model 80—Complete	$2675.00

The smaller Model 21 is also available. Write for Information.

CONCRETE MIXERS

GILSON "MORSPEED"



Model 11-S-PWE Showing the Hydraulic Hoisting Arrangement.

Model 6-S—Capacity 6 Cubic Feet

With faster, smoother action.

Engineered for profitable performance. Simplified construction of quality material, and latest designs. Equipped with an engine that delivers surplus power. This mixer can handle any mixing job within its capacity range year after year.

Available in **Hydraulic Power Loader Model,** 2-wheel, end discharge and 4-wheel, side discharge, and in **Cable Hoist Power Loader Model,** 2-wheel, end discharge.

Model 11-S—Capacity 11 Cubic Feet

A design that has withstood the test of time, operating year in and year out under actual construction work conditions. Materials are the finest throughout; workmanship is unsurpassed. Can be had powered by an air-cooled or a water-cooled engine, or electric motor.

Available in **Hydraulic Power Lower Model** 2-wheel, end discharge; 4-wheel, end discharge, or 4-wheel, side discharge, and in **Cable Hoist Power Loader,** 4-wheel, end discharge.

Model 16-S—Capacity 16 Cubic Feet

Cable Lift Power Loader

A three bagger that can take it!

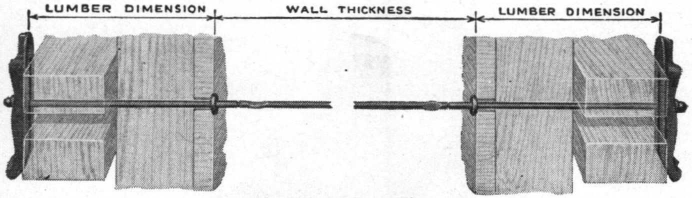
This new Gilson 16-S is built to take it from the tow pole to the discharge chute, from the tires to the top of the water tank. It was designed with the idea that Model 16-S has to turn out a large volume of concrete for a long time under all conditions. It has to have an undercarriage to support and carry a heavy load. Axles and tires that can take abuse, and are easy to trail from job to job, and spot and maneuver about. It was not designed to be the lightest or the heaviest, or the smallest or the largest, or the most streamlined 16-S made. It was made to deliver concrete efficiently and give maximum performance under adverse conditions.

Available only in **Cable Lift Power Loader Skip Model,** 4-wheel, end discharge.

Complete Description, Specifications and Prices on Request

FORM CLAMPS

SUPERIOR SNAP TIES



A Spreader Tie

With forms built up board by board, or with panels of wale height, Snap Ties are placed between sheathing or panel joints. With both sides of any form erected, opposing holes are drilled and ties passed through. Also Snap Ties may be secured to one erected side of large panel, and the free ends guided through corresponding holes in other side as erected.

Break back ¼ to 1½ inclusive; 1 in. is standard.

Type 3M—Safe working load 3000 lbs.; max. capacity 4500 lbs.; ¾ in. diam. fixed spreader washer.

Type 4M—Safe working load 5000 lbs.; max. capacity 7000 lbs.; 15/16 in. diam. loose spread washer.

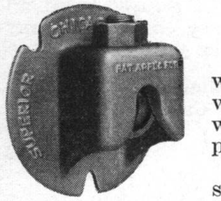
When Ordering—Designate type tie wanted. Give wall thickness and actual net sizes of sheathing, studs and wale as shown in above cut.

Ties are packed 100 in a carton.

Prices on Request

FORM ROD CLAMPS

SUPERIOR



For Clamping Plain Round Mild Steel Tie Rods

Especially advantageous for the tying of warped walls and for other field conditions where, because of the difficulty of determining wall thicknesses, prefabricated ties are not practicable.

Uses an eye bolt rather than a set screw to secure the rod.

Mild steel rods are cut to length, allowing 11 to 13 in. additional to the out to out distance of wales for the rod clamps and tightening wrench on one end. The clamp is tightened firmly to one rod end on the bench; the other end is slipped through the forms, and the second clamp put on the rod. The form is drawn into line with the tightening wrench, and the nut drawn down.

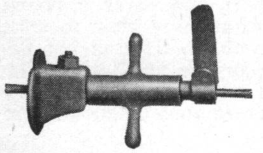
Nos.	1	2	3	4
For rod, in.	¼	⅜	½	⅝
Base diam., in.	2⅝	3⅛	3⅝	4¼
Base area, sq. in.	5.4	7.7	10.3	14.2
Length, in.	1 9/16	2	2¼	2¾
Rec. working load, lbs.	1500	3000	5000	9000
Yield point of rod, in.	2140	5200	8400	12460
Wt. per 100 pcs., lbs.	68	112	181	288
Per 100	$.....	.....	.....	.....

Open stock.

Prices on Request

ROD CLAMP TIGHTENING WRENCHES

SUPERIOR



Hard Malleable Iron

Made especially for use with Rod Clamps listed above.

Reduce the cost and increase the speed of application.

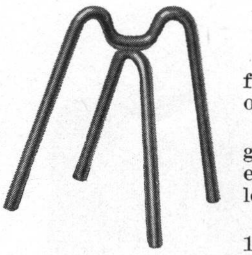
Nos.	**1-W**	**2-W**	**3-W**	**4-W**
For clamps, Nos.	1	2	3	4
Weight each, lbs.	1¾	2	2¼	2½
Each	$....	....	....	....

Open stock.

Prices on Request

CONCRETE REINFORCING HIGH CHAIRS

INDIVIDUAL (SCREED CHAIRS)



Type HC—Standard; Bearing Directly on Forms

Give dependable support wherever reinforcing steel is placed in the upper portion of concrete slabs.

Wide at base for stability and of heavy gauge wire for strength. Available with end bearing legs as shown or with upturned legs.

Commonly used as a screed chair with 1 in. pipe as a screed. Notch at top was designed for this purpose.

Available in heights from 2 to 6 in. in ¼ in. increments.

Prices on Request

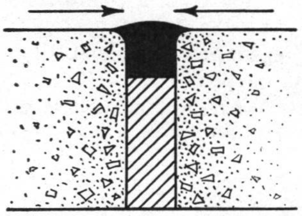
WATER STOPS AND SEALS

COPPER

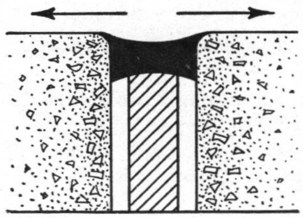
Copper water stops and seals for joints in concrete are made to order in accordance with dimensions, weight of copper and shape specified in the plans and specifications for the project in which they are required.

CONCRETE JOINT SEALS

SERVICED HOT-POURED PARA-PLASTIC



Joints compressed in warm weather temperatures



Joints contracted in sub-zero temperatures

Para-Plastic provides a positive seal for joints in all types of monolithic construction and is designed for use with the non-extruding type of expansion joints.

It maintains bond and elasticity in all temperatures and weather conditions. In case of shear action causing temporary distortion and break in bond, Para-Plastic, which is self-healing, will knit itself together following realignment of the joint to resume a water-tight seal.

Advantages and Characteristics

Para-Plastic is unaffected by extreme temperatures from 0° to 180° F; prevents infiltration of water or other foreign substances and maintains perfect bond with concrete during contraction as well as resisting bumps during expansion.

It will adhere to steel, metals, wood, tile and other surfaces, as well as to concrete.

Meets Federal Specifications SS-F-336A and C.A.A. P-605.

	Per pound
Para-Plastic—50 lbs. in a paper bag	**$0.18**

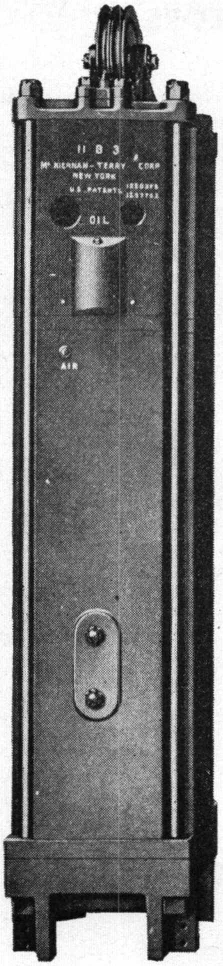
Quantity Table

*Pounds required per 100 lineal feet.

Depth opening, in.	Width opening, in.						
	¼	⅜	½	⅝	¾	⅞	1
¼	2.8	4.2	5.5	6.9	8.3	9.6	11
½	5.5	8.3	11.0	13.8	16.5	19.3	22
¾	8.3	12.4	16.5	20.6	24.8	28.9	33
1	11.0	16.5	22.0	27.5	33.0	38.5	44
1½	16.5	24.8	33.0	41.3	49.5	57.8	66
2	22.0	33.0	44.0	55.0	66.0	77.0	88

*Based on 63 lbs. per cu. ft. Weight of 1 gal., 8 lbs.

Note—Other depths and widths are in direct proportion.



PILE HAMMERS

McKIERNAN-TERRY DOUBLE-ACTING

McKiernan-Terry Double-Acting Pile Hammers hit powerful blows at high frequency. For years, on land, and above or under water they have proved to be fast and economical pile hammers for driving all but the largest and heaviest piles.

The high frequency of blows of the Double Acting Pile Hammer keeps the pile in motion, resulting in faster driving at low cost.

Our Double-Acting Pile Hammers cover the widest range of pile driving conditions.

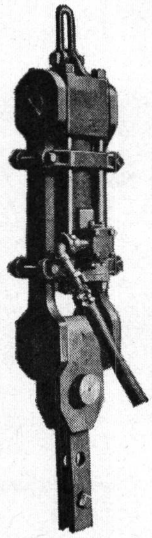
Nos.	**0**	**1**	**2**	**3**	**5**	**6**	**7**	**9-B-3**	**10-B–3**	**11-B-3**
Net wt. with flat or bell (cup) anvil, hammer only, lbs.	105	145	343	675	1500	2900	5000	7000	10850	14000
Wt. of ram, lbs.	5	21	48	68	200	400	800	1600	3000	5000
Bore, in.	2¼	2¼	4	3¼	7	9¾	12½	8½	10	11
Stroke, in.	4½	3¾	5¼	3¼	7	9¾	12½	8½	10	11
Blows per minute, normal	1000	500	500	400	300	275	225	145	105	95
Compressed air required, actual cubic feet	60	70	70	110	250	400	450	600	750	900
Steam or air pressure required at hammer, lbs. per sq. in.	100	100	100	100	100	100	100	100	100	100
Size of wood sheeting or round timber piles, inches, approximate.	2x10 3x 8	2x10 3x10	3x8	3x12	4x12	6x12	10x14	17	20	21
Penetration in average material, feet, approximate	3–4	4–6	6–10	6–10	10–15	15–20	20–30	30–40	50–70	60–80
Size steel sheet piling, inches, approximate	9	9	9	12	12	12	Largest	Largest	Largest	Largest
Penetration in average material, feet, approximate	5–6	6–10	10–15	10–15	15–20	20–30	30–40	50–60	60–80	70–100

Single-Acting, Pile Hammers are also available. They have relatively heavier mass rams hitting at lower striking velocities and fewer blows per minute. They are designed for economical driving of the heaviest precast concrete and other heavy mass piles.

Complete Specifications and Prices on Request

PILE EXTRACTORS

McKIERNAN-TERRY DOUBLE-ACTING



These Extractors follow the same mechanical principles that are used in McKiernan-Terry Pile Hammers.

They are built ruggedly to stand up under the severe service imposed by this kind of work. Their design includes the means necessary for quick connecting up to the pile, placing it where desired after extraction, and disconnecting the pile without loss of time.

The high frequency and energy of the sharp uncushioned blows of the Extractor vibrates and loosens the most stubbornly set piling.

No. E-2 Extractor is recommended for the average light extracting job; but for longer, heavier and more stubbornly set piling the No. E-4 should be used. No. E-2 is designed to withstand a crane pull up to 50 tons, No. E-4 to 100 tons.

Steam or air pressure should not exceed 125 lb. gauge.

Nos.	**E-2**	**E-4**
Net wt. extractor and attachment, lbs.	2600	4400
Wt. of ram, lbs.	200	400
Bore, in.	7	9
Stroke, in.	3	3
Strokes, per minute	450	400
Width over all, in.	25	26
Depth over all, in.	19	22
Length over all, in.	100	125
Air consumption, cu. ft. per minute	400	550
Boiler, HP	30	35
Each	$......	......

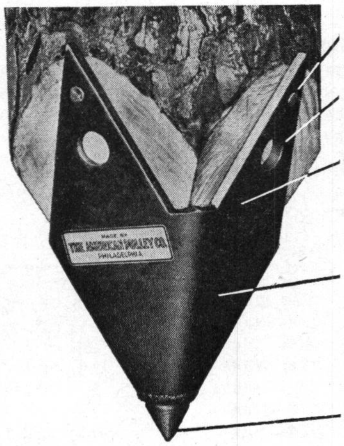
Prices on Request

PILE SHOES

AMERICAN ALL-STEEL

For Wood Piles

Designed to protect end of pile and prevent its "brooming"; to make penetration possible where driving is toughest; to drive to greater depths; to speed up the work, and to drive piles straight.



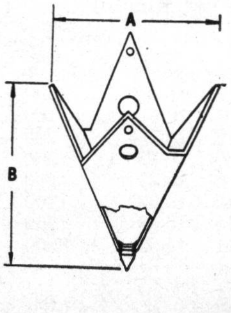
Easy to Apply
Nail holes provided for rapid, permanent application.

Fit the Pile
Bending holes permit tailor made fit to sides of pile. Wings take contours of pile.

They are Stronger
Made of ¼ in. steel plates, accurately formed and solidly welded together.

They Can't Come Off
Fit over end of sharpened pile. Obstructions can not push or tear these shoes from the pile.

Sharp Point
Tip made from solid steel bar stock, turned to a sharp point and welded into the shoe.

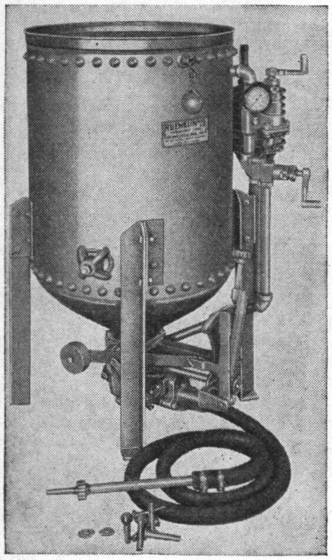


Nos.	Each	For piles, diam., in.	A, in.	B, in.	Wt. each, lbs.
1	$1.00	6 to 9	7¾	10	6¼
1½	1.50	8 to 11	9⅝	11¾	8
2	2.00	10 to 14	10⅞	13½	13¼

Open stock.

SANDBLAST GENERATORS

RUEMLIN JUNIOR, MEDIUM AND MASTER



Powerful

Maximum force of the blast is delivered by straightline sand passages. Blast velocity is not retarded by twists or elbows.

Instant Stop and Start

Patented stopper valve starts or stops the blast without exhausting compressed air from tank. Stops both sand and air instantly without adjusting sand lever. Standard equipment on machines 400 lb. capacity and larger. Furnished on Junior Models at extra cost.

Automatic Start Mixer Box

A real time saver. Always assures an even mixture of sand and air. Unnecessary to adjust sand lever when starting or stopping blast. Choking of nozzles eliminated.

Instant Abrasive Adjustment

By the movement of a lever the abrasive is regulated for density of mixture, nozzle opening or size of abrasive.

Pure Rubber Valves

Provided in all sand passages to prevent wear, outlast metal valves 50 to 1.

Safe Steel Tank

Heavy riveted tank with durable, rigid steel legs. Working pressure 100 lbs. Available in standard or ASME construction. Equipped with conical bottom to drain abrasive.

Convenient Accessibility

Valves, sand passages and rubber air valve seats easily inspected. Ample hand hole in tank.

Handles All Abrasives

Sand, steel shot, steel grit, or artificial abrasive.

Efficient Moisture Expeller

Removes water from the compressed air supply.

Capacity, cu. ft.	Std. Tank, each	ASME Tank, each	Capacity, lbs. Sand	Capacity, lbs. Steel	Diam. tank, in.	Height over all, in.	Wt. each, lbs.
			Junior				
½	$ 99.00	$111.00	50	125	9	24	55
1¼	157.00	169.00	120	300	12	33	130
2	182.00	205.00	200	500	12	42	180
3	209.00	253.00	300	750	14	46	210
			Medium				
4	$316.00	$366.00	400	1000	22	44	390
6	375.00	419.00	600	1500	22	50	450
			Master				
7½	$435.00	$490.00	750	1875	26	48	800
10	468.00	520.00	1000	2500	26	54	870
15	628.00	715.00	1500	3750	30	70	1200
20	689.00	765.00	2000	5000	36	71	1500

Hose and Nozzle Recommendations

Nozzle orifice should be selected after determining how many cubic feet of air are available for the blasting work.

Compressed air available in cu. ft. per minute	Nozzle size recommended, in.	Generator recommended, cap., lbs.	Blast hose, ID, in.
9–15	3/32	120–200	⅜ or ½
21–26	⅛	200–300	½ or ¾
47–58	3/16	400–750	¾ or 1
85–103	¼	600–1000	¾ or 1
133–161	5/16	750–1000	1 or 1¼
160–250	⅜	750–1500	1¼ or 1½
260–400	½	1000–2000	1½ or 2

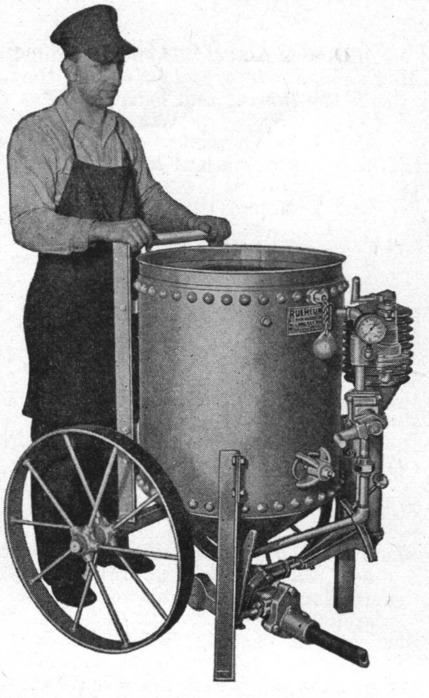
Air Consumption (Actual Cubic Feet per Minute)

Hole in generator nozzle, in.	Gauge pressure, lbs. 60	70	80	100	Horsepower	Sand discharged per hour, lbs.
1/16	4	5	5.5	6.5	2 to 4	50
3/32	9	11	12	15	to 6	100
⅛	17	19	21	26	5 to 7½	200
3/16	38	43	47	58	6 to 15	500
¼	67	76	85	103	8 to 21	900
5/16	105	119	133	161	12.5 to 33	1200
⅜	151	171	191	232	18 to 48	1700
½	268	304	340	412	41 to 85	3000

Open stock.

SANDBLAST GENERATORS

RUEMLIN PORTABLE



Medium Generator With Two-Wheel Mounting

With two 26 in. diameter steel wheels and handle. This is a very convenient arrangement. When moving the machine, the operator simply tilts the generator at an angle, handling like any two-wheel cart.

Size generator, lbs.	With Std. Tank, each	With ASME Tank, each	Wt. each, lbs.
400	$364.00	$382.00	540
600	391.00	435.00	600

Master Generator With Four-Wheel Mounting

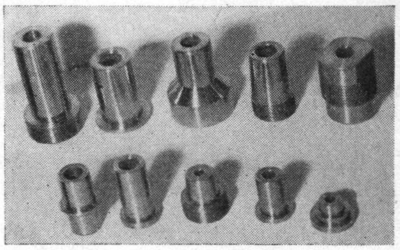
Equipped with swivel front axle and handle for turning in short spaces.

Size generator, lbs.	With Std. Tank, each	With ASME Tank, each	Wt. each, lbs.
750	$509.00	$564.00	960
1000	542.00	594.00	1030
1500	702.00	789.00	1360
2000	763.00	839.00	1660

Open stock.

PRESSURE BLAST NOZZLES

NORBIDE



Why You Should Use Norbide Pressure Blast Nozzles

1—They give more service per dollar cost than any other nozzle now available. 750 hours when used with silica sand. 1500 hours when used with steel grit or shot.

This is the guaranteed minimum service when metal adapter is properly protected with rubber gasket. During this time enlargement at the outlet end will not increase the size to more than one and one-half times the original orifice diameter.

2—They decrease air consumption from 10% to 20% as compared with iron nozzles.

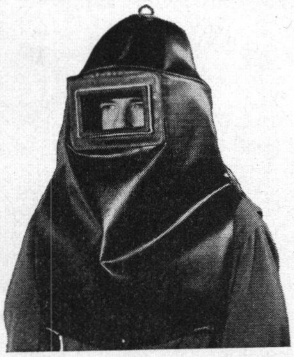
3—They maintain a stream contour and abrasive velocity that improves blasting efficiency.

Norbide is the registered trademark for products made of Norton Boron Carbide (B_4C)—an entirely new material developed by the research laboratories of Norton Co. Norton Boron Carbide is the hardest material ever manufactured for commercial use—exceeded in hardness only by the diamond. It may be crushed to powder and used as an extremely hard abrasive (for jobs previously possible only with diamond dust); or it may be molded at tons of pressure and thousands of degrees of heat into products that will resist wear to an unbelievable degree. In its molded form as used for pressure blast nozzle liners, it is of a dense, homogeneous structure and lighter than aluminum.

Prices on Request

SAND BLASTING HELMETS

BULLARD POSITIVE PRESSURE



With Hard Boiled Hat

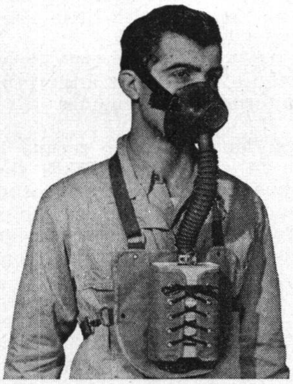
Readily adjusted to fit any size head. Molded rubber lens frame.

Outside hood is abrasive resistant chrome leather. Inside hood is closely woven fabric with a drawstring attachment.

	Each
No. 37-1—Wt. each 6 lbs.	$50.00

SAND BLASTING MASK RESPIRATORS

BULLARD



Construction of face piece permits wearing of protective goggles.

Used with standard CM type canisters for protection against vapors.

	Each
No. 44RM—Wt. each 4 lbs.	$19.50

Above, one in a box.

OTTAWA SILICA SAND

Ottawa Silica Sand is recommended for sandblasting aluminum, iron and steel castings. It is not a crushed rock but a natural, round bullet like grain of extreme hardness. Ottawa sand is superior to crushed rock as the particles do not shatter on contact with the casting, and the sand can be used and reused. The grains are uniform in size and various sizes are available.

Prices on Request

STEEL SHOT ABRASIVE

Steel abrasives have proved to be lowest in cost per ton of metal surface cleaned. Create little dust because they do not disintegrate like sand.

All sizes of grit and shot available for every blasting purpose.

Prices on Request

INDUSTRIAL REVOLVING CRANES

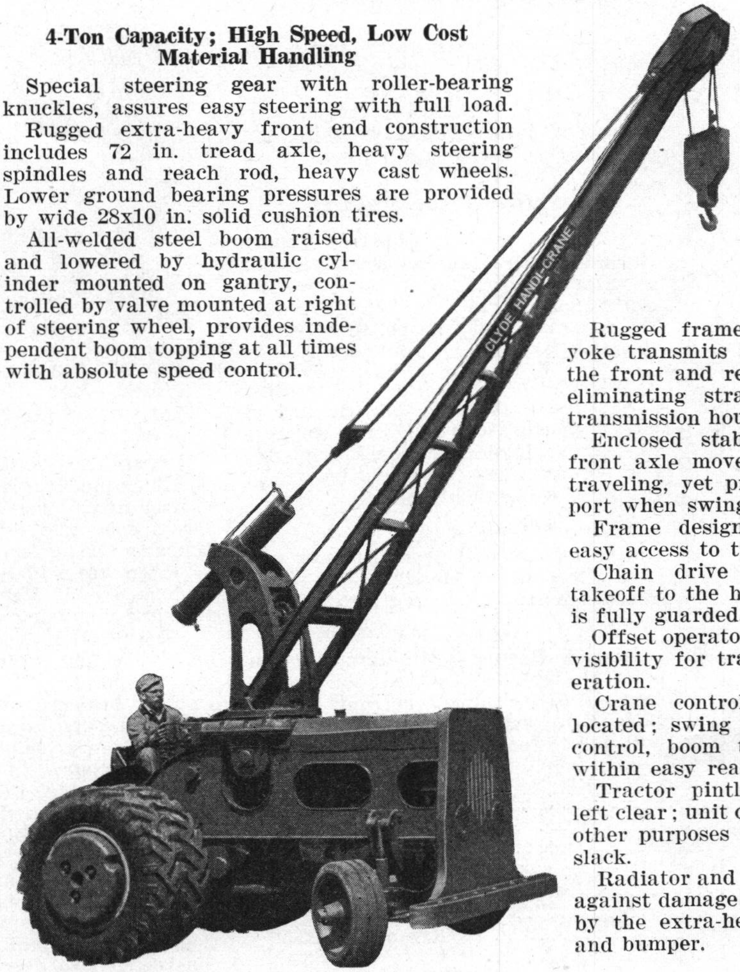
CLYDE MODEL "U" HANDI-CRANE

4-Ton Capacity; High Speed, Low Cost Material Handling

Special steering gear with roller-bearing knuckles, assures easy steering with full load.

Rugged extra-heavy front end construction includes 72 in. tread axle, heavy steering spindles and reach rod, heavy cast wheels. Lower ground bearing pressures are provided by wide 28x10 in. solid cushion tires.

All-welded steel boom raised and lowered by hydraulic cylinder mounted on gantry, controlled by valve mounted at right of steering wheel, provides independent boom topping at all times with absolute speed control.



From Every Angle Model U "Has What It Takes"

Revolving turntable rides between two rows of large-diameter steel balls, running in flame-hardened races grooved in the all-steel turntable castings.

Rugged frame with heavy front yoke transmits all load directly to the front and rear axles, positively eliminating strain on the tractor transmission housing or engine case.

Enclosed stabilizers permit full front axle movement for smoother traveling, yet provide positive support when swinging load.

Frame design permits full and easy access to tractor engine.

Chain drive from tractor side takeoff to the hoist and swing unit is fully guarded.

Offset operator's seat provides full visibility for traveling or crane operation.

Crane controls are conveniently located; swing control, hoist drum control, boom topping control are within easy reach of the operator.

Tractor pintle hook drawbar is left clear; unit can be used for many other purposes when crane work is slack.

Radiator and wheels are protected against damage from swinging loads by the extra-heavy radiator guard and bumper.

Specifications

The Handi-Crane

Dimensions—Over all length, 11 ft. 3 in. Wheelbase, 75⅝ in. Over all height, on 12:00x28 pneumatic rear tires, including gantry construction, 125 in.

Load Hoist—Driven by a hardened and ground steel worm and bronze worm gear with fully enclosed reversing mechanism running in oil. Hook speed 30 FPM with three part line. Automatic brake on load shaft.

Swing Mechanism—Swing with special large diameter worm gear operating between two rows of large steel balls. Balls operate in flame hardened races grooved into heavy steel case castings. Self-locking mechanism with vanadium steel springs to absorb all shock. Control by reversing clutch running in oil. Speed 1.1 RPM. Boom can be stopped in any position.

Boom Topping—Boom raised and lowered by hydraulic cylinder mounted on gantry; hydraulic pump is driven from front end of engine crankshaft.

Booms—Steel channel with angle bracing. All electric welded. Standard length 18 feet. Special booms furnished on order.

Controls—Standard tractor controls. Hoist, swing and boom topping controlled by two levers and hydraulic valve, conveniently located within easy reach of the operator.

Crane Mounting—Heavy structural all welded frame with heavy front yoke, relieving tractor of twisting strains. Radiator and wheels protected by heavy steel plate and bumper.

Drive—Enclosed chain.

Stabilizers—Positive-manual controlled type.

Weights—(Approximate)—Operating weight—19,250 lbs. (with liquid in tires). Shipping weight—18,000 lbs.

The Tractor

Tractor—Minneapolis-Moline UTI five-speed Industrial Tractor with 72 in. wide front heavy duty axle, heavy cast front wheels, roller bearing knuckles and special steering gear for crane use. Tractor equipped with 70-octane gasoline manifolds, high compression cylinder head, muffler hand throttle, foot accelerator, horn. Bendix rear wheel brakes foot operated, hand operated parking brake, foot clutch, heavy platform and wheel guards, pintle hook drawbar and spring cushion seat. Lights are standard equipment.

Engine—Minneapolis-Moline Model KEF Twin City, 4 cylinder vertical. Bore 4¼ in. Stroke 5 in.; 283.7 cu. in. piston displacement. Normal RPM 1300. Maximum brake HP 48 @ 1300 RPM. Electric starter with generator and magneto ignition; battery furnished.

Turning Radius—17 ft., 6 in.

Speeds—At 1300 RPM engine speed with dual 12:00x28, 6-ply low pressure rear tires.

	1st	2nd	3rd	4th	5th	Rev.
MPH	2.3	3.2	3.7	5.4	12.5	1, 8

Tire Equipment Available—All rear wheels furnished with heavy wheel weights.

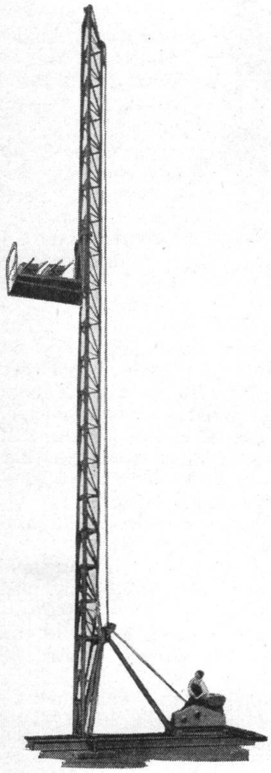
Front Tires—28x10 solid cushion type. (If pneumatic fronts are desired, write for quotation.)

Rear Tires—12:00x28, 6-ply dual pneumatics.

Prices on Request

PORTABLE BUILDERS' TOWER

CLYDE STEEL



Easily transported from job to job. Quickly and safely assembled on the ground and raised to operating position with its own hoist. Can be disassembled into sections weighing not over 300 lbs. for easy handling.

Exclusive Clyde Features

A ½ yard capacity **Concrete Hopper Bucket** is available for use instead of elevator platform. Stop gate permits control of concrete for dumping into wheelbarrows, buggies or directly into forms.

Safety Brake—A smooth, positive acting brake that can be attached to either the elevator platform or concrete bucket. Spring-loaded shoes grip side members of tower to prevent load from falling if cable should break.

Trailer Wheels with a towing hitch can be furnished if desired to tow machine instead of loading on truck. Wheels raised or lowered into position by hoist.

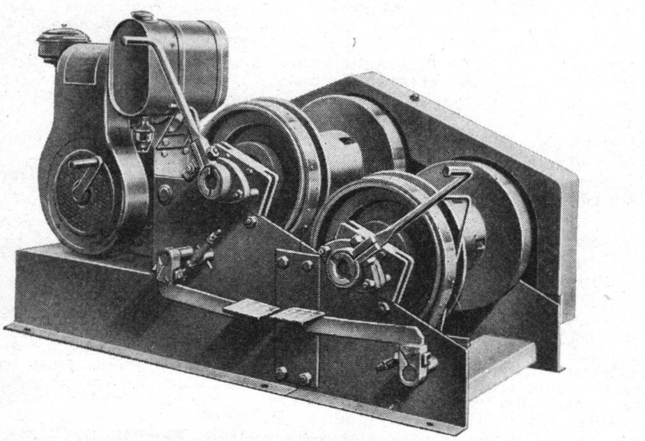
Derrick Boom—10 ft. derrick boom of 2000 lbs. capacity available to increase the usefulness of your tower. Boom attached on ground and raised with the tower.

Models	**PBT**	**HPBT**
Heights, ft.	40 to 70	40 to 100
Capacity, lbs.	2000	2500
Single drum gasoline hoist, HP	18	30
Load speed, FPM	160	178
Length sled frame	18′0″	19′11″
with CWT. support	20′6″	22′5″
Width	6′4″	6′4″
with outriggers	10′2″	10′2″
Weight 40 ft. tower, complete, lbs.	5500	5900
Weight 10 ft. sections, lbs.	300	300

Prices on Request

GASOLINE DRUM HOISTS

CLYDE SINGLE AND DOUBLE DRUM



Line Pulls From 1500 to 3000 Pounds

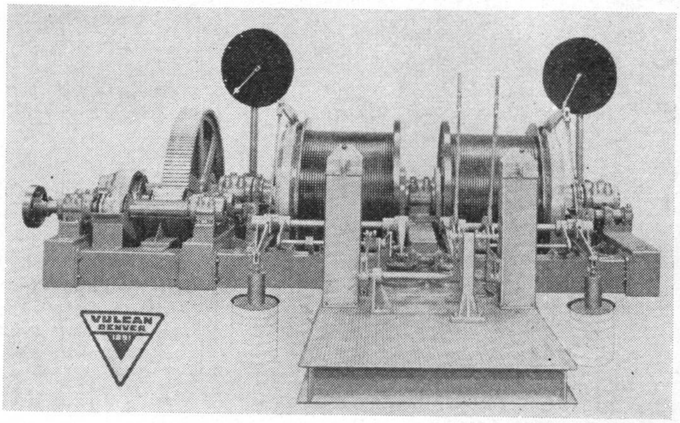
The rugged simplicity of their design means better performance, no frequent or delicate adjustments required to maintain full hoist efficiency. The two drum hoist can be readily converted into a single drum unit by removing the forward drum extension. A second drum can be easily attached to any single drum hoist.

Ball bearings throughout. The friction mechanism is double acting and provides positive release.

Prices on Request

ELECTRIC DRUM HOISTS

VULCAN-DENVER



Drums are sectionalized on all numbers except No. 21½ and smaller, and are formed by a machined drum shell and two machined drum ends all rigidly interconnected by steel members. Drum shell and drum ends made of Meehanite, a material 2½ times as strong as cast iron.

Gears are made of Meehanite and pinions of forged steel. Motor pinions are of Fabroil, a composition material quiet in operation and requiring no lubrication.

Heavy duty, self-aligning ball bearings are standard except on No. 24 and larger hoists where extra heavy ring oiling bearings are used.

Post brakes are designed with large factors of safety and ample leverage to permit holding the load with little effort. Steel construction is employed throughout.

Clutches are of the contracting band friction type. Servo-acting and self-locking, their performance is smooth and they engage or release with little effort. Internal gear clutches are optional on double drum hoists.

Since the main gear carries the clutch, the torque is transmitted directly from gear rim to clutch ring. With the clutch disengaged, the drum is free spooling and no gears rotate.

Frames are sectionalized and of unbreakable steel construction. Unusual rigidity is secured by the box type design which consists of two deep side members, a wide platform front and a girder type rear distance piece.

Single Drum

Nos.	**17P**	**21½P**	**22P**	**23P**	**24P**	**24½P**
Rope size, in.	⅝	⅝	⅝	⅞	1	1⅛
Rope pull, lbs.	2000	3000	4000	5000	6000	7000
Motor HP and rope speed in feet per minute	HP-RS	HP-RS	HP-RS	HP-RS	HP-RS	HP-RS
	10-140	20-190	30-210	40-225	50-235	60-250
	15-210	25-235	40-280	50-230	60-280	75-300
	20-280	30-280	50-350	60-335	75-350	100-400
Rope cap., ft.	900	1400	1800	2000	2000	2000
Rope size, in.	½	⅝	⅝	⅝	¾	⅞
Dia. drum, in.	14	21	24	28	32	36
Drum face, in.	18	24	24	27	28	30
Length, in.	76	92	100	110	120	132
Width, in.	44	57	57	68	80	90
Wt. each, lbs.	2100	2900	4100	6400	8400	11500

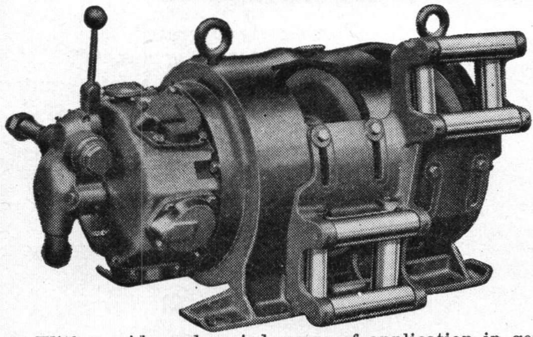
Double Drum

Nos.	**21½D**	**22D**	**23D**	**24½D**	**80D**	**100D**
Rope size, in.	⅝	⅝	⅝	⅞	1	1⅛
Rope pull, lbs.						
One drum.	2750	3600	4500	6500	8500	12500
Other drum	1250	1600	2000	3000	4000	6000
Differential load, lbs.	1500	2000	2500	3500	4500	6500
Motor HP and rope speed ft. per min.	HP-RS	HP-RS	HP-RS	HP-RS	HP-RS	HP-RS
	20-310	30-340	40-370	60-400	75-390	125-450
	30-460	40-460	50-470	75-500	100-520	150-540
Rope cap., ft.	1050	1370	1570	1650	1700	2150
Dia. drum, in.	21	24	28	36	48	54
Drum face, in.	18	18	21	24	36	42
Length, in.	92	102	110	126	132	150
Width, in.	102	111	120	168	216	252
Wt. each, lbs.	5500	8000	12000	22000	36000	55000

Prices on Request

AIR-OPERATED DRUM HOISTS

GARDNER-DENVER AIRSLUSHER



Strength and Power to Haul Bigger Loads Faster

Amazing Simplicity of Operation

With a wide and varied range of application in general mining, contracting and industrial fields, the new Gardner-Denver line of Airslushers provides an ideal means of hauling, dragging or scraping in mines, smelters, quarries and construction work. **Compactly built, and light in weight, they can be conveniently moved through small raises and chutes.**

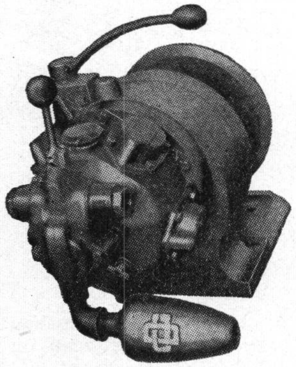
These Airslushers are exceptionally easy to operate. A single lever controls direction and speed. A powerful, five-cylinder radial air motor **provides high torque at all speeds—develops maximum power and speed** in either direction.

Built to operate dependably, day in day out, year after year—to stay underground. All working parts are fully enclosed. **Dirt and water are sealed out—lubricant is sealed in.**

Models	**HEE**	**HKE**	**HME**
Rated cap.—rope pull, lbs.	1100	2000	2500
*Rope speed, ft. per min.	150	132	125
*Rope pull, lbs.	2600	3600	4200
Max. cap. each drum, ft.—			
¼ in. cable	380	1050	1050
⅜ in. cable	170	470	470
½ in. cable	95	265	265
Working cap. each drum, ft.—			
¼ in. cable	297	820	820
⅜ in. cable	133	365	365
½ in. cable	74	210	210
No. foundation bolt holes	4	8	8
Size foundation bolt holes, in.	11/16	13/16	13/16
Air pressure, lbs. gage	70 to 100	70 to 100	70 to 100
Size air hose, in.	1	1¼	1½
Net wt. without cable guides, lbs.	270	732	750
Net wt. of cable guides, lbs.	44	88	88
Ship. wt. with cable guides, lbs.	369	970	988
Each	$817.00	1408.00	1676.00

*Actual brake test figures at 80 lbs. air pressure.

GARDNER-DENVER SINGLE DRUM



Gardner-Denver's single drum air hoists are built to the same standards of quality as are the Gardner-Denver line of Airslushers. Single drum hoists use the same five-cylinder radial air motor as used in the Airslusher and employ the same type sealed construction.

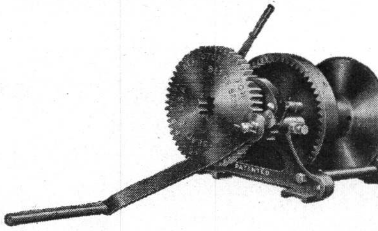
Model	Each	*Vertical lift cap., lbs.	Av. rope speed, feet per min.	Max. rope capacity in feet 5/16 in.	⅜ in.	½ in.	Air hose, in.	Net wt. each, lbs.
HB	$534.00	1250	77	400	275	...	¾	258
HBA	600.00	1250	77	400	275	...	¾	282
HBL	578.00	1250	77	640	445	...	¾	269
HBW	534.00	1250	77	—Winch head—			¾	265
HK	759.00	2000	132	...	735	410	1	440
HKL	853.00	2000	132	...	1490	840	1	475
HKK	891.00	2000	132	...	735	410	1	460
HMK	985.00	2500	117	750	520	295	1½	525

*At 80 lbs. pressure.

All above, open stock.

HAND DRUM HOISTS

BEEBE ALL STEEL WINCH



9 Features That Make It Impossible to Break a Beebe Hoist in Hand Operation

1—Patented Internal Cam Action Brake. Wire-inserted asbestos lining; positive fingertip control; 4 to 1 braking ratio.
2—Patented Instant Gear Change. Eliminates idle gears and gear shift parts.
3—Only Eight Parts. All high grade electric steel.
4—Machined and assembled without keys, pins or set screws to strip.
5—Internal Gear Main Drive. Minimizes friction.
6—Holding Dog. Spring-operated onto external gear; assures absolute safety. Positive with hoist in any position. Equipped with locking hold-out lug.
7—Free Spooling instantly available.
8—Handle Instantly Adjustable. Allows maximum cranking speed and power.
9—Crank Pinion Instantly Locks Positive. Gives 24:1 ratio for heavy lifting.

5-Ton, 2-Speed "General Utility"

5 in. diam. drum, with 3⅝ in. flange.

Width drum, in.	Each	Size rope, in. ⅜	7/16	½	⅝	¾	Ship. wt. each, lbs.
		Drum capacity, ft.					
8	$ 99.00	445	325	250	160	...	125
12	110.00	675	500	385	240	160	143
16	121.00	890	650	500	320	225	170
24	132.00	1335	975	750	480	335	200

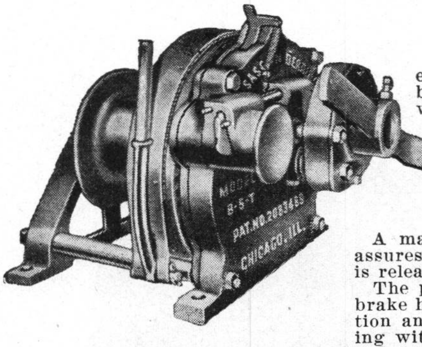
2-Ton, 2-Speed "Lightweight"

4 in. diam. drum, with 2¼ in. flange.

Width drum, in.	Each	Size rope, in. ¼	5/16	⅜	7/16	½	Ship. wt. each, lbs.
		Drum capacity, ft.					
6	$77.00	300	200	150	100	75	70
10	88.00	575	360	250	175	135	85

SASGEN ALL STEEL WINCH

Built to Stand Hard, Rough Use



All cast steel gears are safety enclosed. Oilite bronze-bushed bearings are self-lubricating with core of drum serving as an oil reservoir, lubricating all moving parts.

When handle is removed from the winch, drum is free spooling.

A manually operated hand brake assures full control of drum as cable is released.

The patented automatic safety brake handle holds load in any position and permits raising and lowering with ease and safety.

The manually operated safety pawl may be used to lock gears to prevent lowering of load even by reversing handle.

5-Ton

Each

No. B-5-T—Convertible from low speed 24½ to 1, to high speed 7 to 1; drum 4½ in. diameter, 10 in. long; full capacity 260 ft. of ½ in. cable; complete with standard handle; wt. each 130 lbs. $126.50

No. B-5-TS—With safety brake handle instead of standard handle; otherwise same as No. B-5-T 148.50

15-Ton

A giant for power, a glutton for punishment. Complete with standard handle.

Each

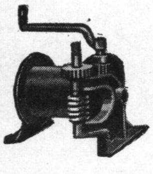
No. B-15-T—Convertible from low speed 100 to 1, to high speed 28 to 1; drum 8½ in. diameter, 12 in. long; full capacity 225 ft. of ¾ in. cable; wt. each 370 lbs..... $330.00

All above, open stock.

Note—For information on "Proper Sizes of Sheaves and Drums for Wire Rope" see page 567.

HAND DRUM HOISTS

SASGEN WINCH



Safety Worm Gear

Malleable cast worm wheel and steel cast worm.

Nos.	Each	Drum Diam., in.	Drum Lgth., in.	Gear ratio	Capacity 1 man 1 line, lbs.	Capacity 1 man 2 lines, lbs.	Wt. each, lbs.
0	$31.63	5½	6	16 to 1	350	700	35
1	44.00	5½	6	20 to 1	750	1500	60
2	60.50	8	10	30 to 1	1000	2000	85

POWER TAKE-OFF TRUCK WINCHES

SASGEN

With 1-1 Power Take-Off

Designed and constructed particularly for use on general purpose, medium-service trucks.

Finest Timken adjustable tapered roller bearings; long life, adjustable and fully automatic safety brakes.

Supplied complete with one speed forward, one reverse power take-off and all driving parts.

Size cable, in.	¼	5/16	⅜	½
Capacity drum, ft.	1050	675	475	225

Each

No. S-3-T—Safe working load 6000 lbs. single line, 29:1 gear ratio, 10x4x11 in. drum, 52 in. long over all; wt. each 250 lbs. $318.00

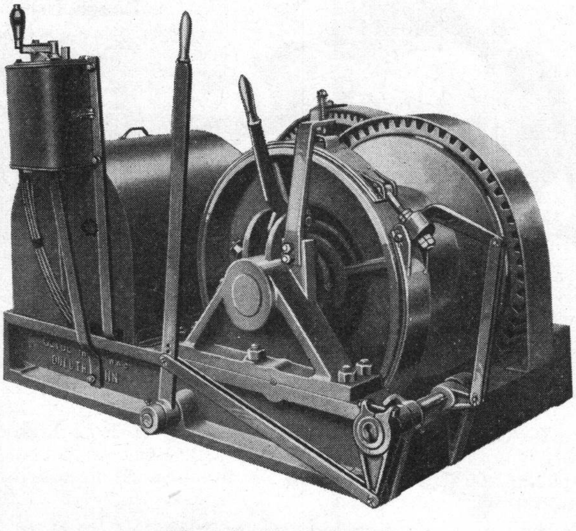
No. S-3-TA—With flexible cab control for jaw clutch, otherwise same as No. S-3-T 338.00

Note—Can also be furnished with two speeds forward and one reverse; to order, specify 2-1 PTO.

Note—When ordering, please advise make and model of truck or transmission.

CAR PULLERS

CLYDE DRUM TYPE



Electrically Operated

220-440 volts, 3 phase, 60 cycles, AC.

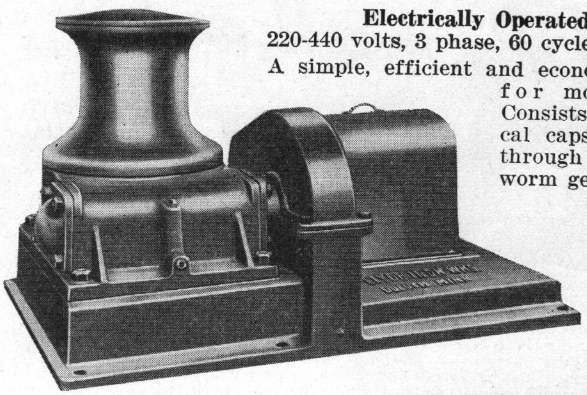
A very sturdy and powerful machine for spotting cars or for various kinds of haulage work. Jaw clutch operated drum for unwinding cable. Reversing drum controller.

Nos.	Each	Horse-power	Starting cap., lbs.	Running capacity Line pull, lbs.	Running capacity Line speed, FPM	Wt. each, lbs.
5917	$2120.00	10	14000	5600	50	3100
5918	2160.00	15	21000	8400	50	3200
5919	2595.00	20	28000	11000	50	3700

All above, open stock.

CAR PULLERS

CLYDE CAPSTAN TYPE



Electrically Operated

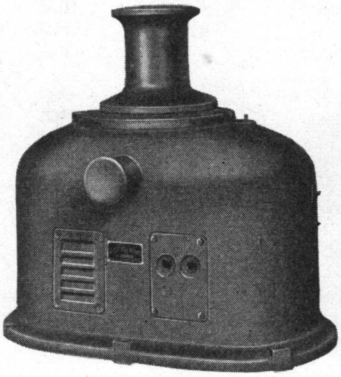
220-440 volts, 3 phase, 60 cycles, AC.

A simple, efficient and economical unit for moving cars. Consists of a vertical capstan driven through spur and worm gearing.

Nos.	Each	Horse-power	Starting cap., lbs.	Running capacity Line pull, lbs.	Running capacity Line speed, FPM	Wt. each, lbs.
5905	$ 825.00	5	5000	2000	50	1450
5906	860.00	7½	7500	3000	50	1500
5907	905.00	10	10000	4000	50	1550
5908	1035.00	15	15000	6000	50	1600

Note—Can be furnished for gasoline engine operation.

CLYDE MODEL "C" CAPSTAN



Electrically Operated

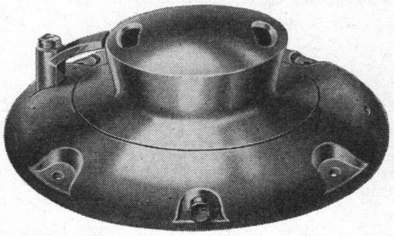
220-440 volts, 3 phase, 60 cycles, AC.

A small, self contained unit with all gearing and motor completely enclosed.

All working parts are carefully machined to produce a smooth running, quiet and efficient machine.

The capstan head is finished to prolong the life of rope and is designed to obtain maximum line pull with little effort by the operator.

Nos.	Each	Horse-power	Starting cap., lbs.	Running capacity Line pull, lbs.	Running capacity Line speed, FPM	Wt. each, lbs.
5940	$ 740.00	3	4000	1600	50	1000
5941	740.00	3	5000	2000	40	1000
5942	740.00	3	6000	2400	33	1000
5943	755.00	5	6500	2600	50	1020
5944	755.00	5	8250	3300	40	1020
5945	1190.00	7½	10000	4000	50	2400
5946	1190.00	7½	125000	5000	40	2400
5947	1190.00	7½	150000	6000	33	2400
5948	1230.00	10	130000	5300	50	2450
5949	1230.00	10	160000	6500	40	2450

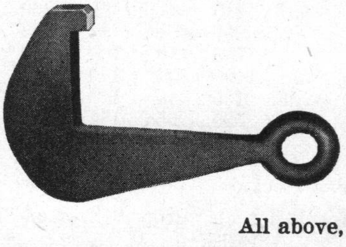


GUIDE SHEAVES

A 12 in. brass bushed sheave of semi-steel rests on a brass wearing collar.

Each

No. 10289 — 27½ in. outside diameter; wt. each 215 lbs..$75.00



CAR PULLER HOOKS

Wrought Steel

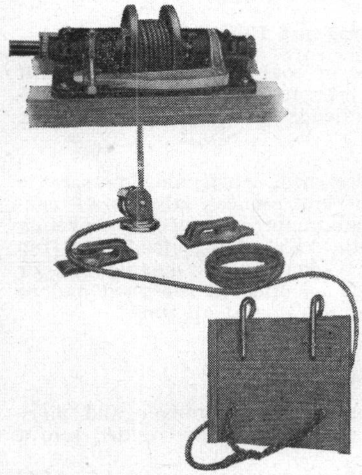
6 in. jaw opening.

Nos.	Each	Jaw to cen. of eye, in.	Wt. each, lbs.
10255	$14.00	10	25
10256	18.00	12	40
10257	24.00	14	45

All above, open stock.

AUTOMATIC POWER SHOVELS

WEBSTER IMPROVED



Although designed primarily for unloading grain from box cars, these shovels are giving exceptional service in unloading certain kinds of coal, lime, cement and other bulk materials. They have also been used successfully in unloading from truck bodies.

Based on many years of experience in successfully manufacturing this type of shovel, the Webster No. 40 has built into its design all the better features of the original units.

Fewer Parts—Means less wear—easier installation—easier replacement of parts.

Less Breakage—Due to compact design and liberal use of steel in small parts.

No Counterweights—The reversing mechanism built into this modern shovel eliminates the necessity of counterweights.

Positive Safety—Assured because the lack of counterweights eliminates the hazard of moving weights and weight ropes.

Two Friction Plugs—Used to secure more friction and impart the reversing action of the mechanism. These are adjustable to give the proper tension.

Positive Action—It never misses engaging the clutch.

No Right or Left Hand Mechanism—Means ease of erection and operation. The No. 40 Power Shovel is neither right nor left handed. The winding drum is centrally located in the supporting frame—the mechanism runs in one direction only. When the shaft runs in the "wrong direction" for your installation, just turn the shovel end for end; the bolt holes are interchangeable.

Easy Control—Means greater efficiency and positive, safe use of this power shovel at all times.

These and many more features make the No. 40 Power Shovel the logical one for your use. May we tell you more about it—today? Write!

No. 40—Mechanism Only

	Each
Single Machine—Wt. 575 lbs.	$325.00
Double Machine—Wt. 1150 lbs.	650.00

Fittings

The usual fittings required for complete operation of the shovel are listed below.

	Each
1—Wood Scoop; wt. each 30 lbs.	$15.00
1—Scoop Chain with thimble; wt. each 6 lbs.	3.50
2—Car Door Sheaves; wt. each 70 lbs.	20.00
1—Swivel Sheave; wt. each 40 lbs.	30.00
50 feet of ⅞ in. Manila rope	8.00

The double shovel requires double the parts listed above, except the third item, which remains the same, as only two car door sheaves are required.

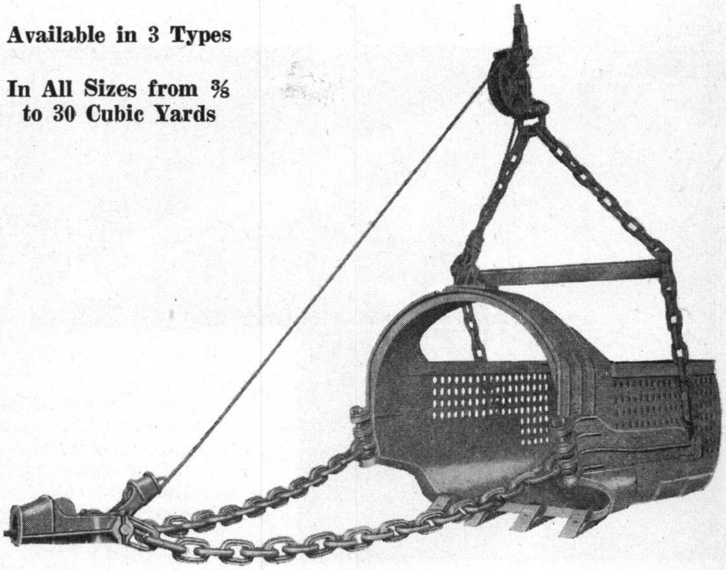
Note—In place of the car door sheaves and swivel sheaves listed, there may be substituted the pedestal or universal sheave, one for a single machine and two for a double machine.

DRAGLINE BUCKETS

HENDRIX

Available in 3 Types

In All Sizes from ⅜ to 30 Cubic Yards



Type LS—"Level Special." A lightweight bucket for levee and drainage work or similar jobs where soft earth must be dug or re-handled or loaded.

Type TS—This medium weight bucket classified as a general utility bucket, ideal for the average excavation work or where gravel or clay must be handled economically.

Type HS—A heavy duty type that takes the tough assignments in its stride. Recommended for moving scale, blasted rock or any other hard formation where a weighty bucket is needed.

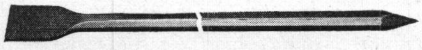
Complete Information and Prices on Request

NOTE

Other types of Dragline Buckets as well as Clamshell Buckets, etc. are available.

Complete Information and Prices on Request

SCALING BARS



Hexagon Tool Steel

⅞ in. diameter. Fabricated with chisel point on one end and pick point on other end.

For use by contractors and others for scaling down banks after blasting.

Length, ft.	4	5	6
Wt. each, lbs.	10½	13	15½
Each	$....	....	....

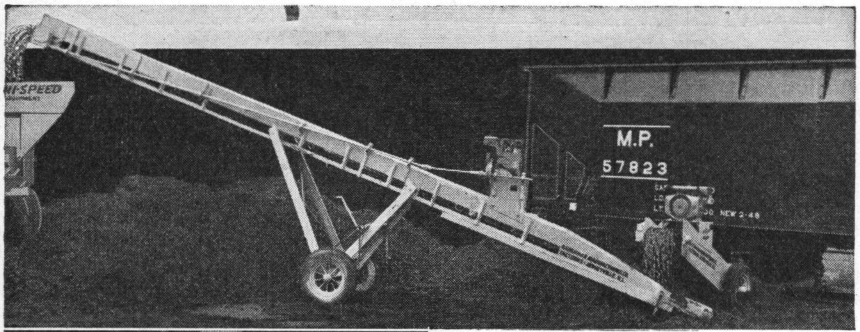
Open stock.

Note—Scaling Bars can be made in various lengths and diameters to suit purpose of user.

Prices on Request

PORTABLE CONVEYORS

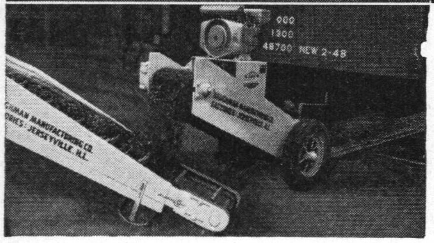
BAUGHMAN "KOLE KING" CONVEYOR AND PILER-STACKER



Heavy Duty, Drag and Flight Chain Type

Handles all kinds of coal including lump. Built for high speed and versatility. Performs a multitude of functions—unloads cars, loads trucks, piles, etc.

The Baughman-designed self-feeding feature is a unique innovation that reduces labor costs considerably. Only a minimum amount of shoveling is required to keep the "Kole King" loading at top speed. Special wheel hand cranks enable one or two men to move the machine in the yard and to keep it in self-feeding position at all times.



Construction Features

Constructed of high tensile alloy steel, 30% lighter yet 17% stronger and more abrasion-resistant than ordinary steel. Five times more rust-resistant. Arc-welded into a compact, streamlined unit.

Roller chain conveyor, fully shielded, each strand with a breaking strength of 16,000 lbs. Ball and roller bearings used throughout. Chain rides on "Rollway" bearings with large grease wells and dirt seals. Galvanized chain tighteners conveniently located.

Heavy duty steel wheels, Timken bearings, 6.00x16 pneumatic tires.

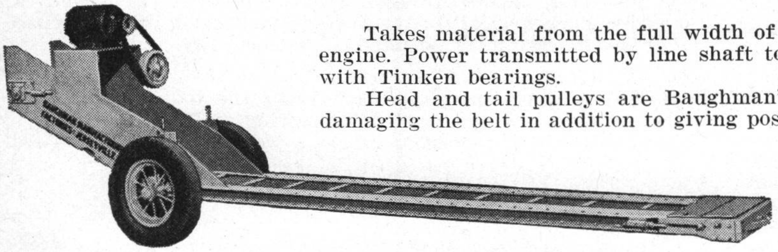
Specifications

Standard lengths 24, 30 and 36 ft.; inside width 22 in.; width over wheels 60½ in.; height obtainable 12 ft.; power, electric 5 HP, gasoline 7-9 HP; approximate weight 3000 lbs.

Prices on Request

BAUGHMAN MODEL 155 HOPPER CAR UNLOADER

Arched Delivery



Takes material from the full width of car. Individually driven with either electric motor or gasoline engine. Power transmitted by line shaft to worm gear drive case, sealed against dirt and water, fitted with Timken bearings.

Head and tail pulleys are Baughman's non-clogging spider type, preventing foreign materials from damaging the belt in addition to giving positive traction.

All shafting turns in the very finest grease-sealed bearings requiring only occasional attention.

Streamlined throughout, providing the best in design and performance.

Can be furnished with 28 in. diameter steel wheels with 4 in. tread, or with drop center rims for 6.00x16 pneumatic tires.

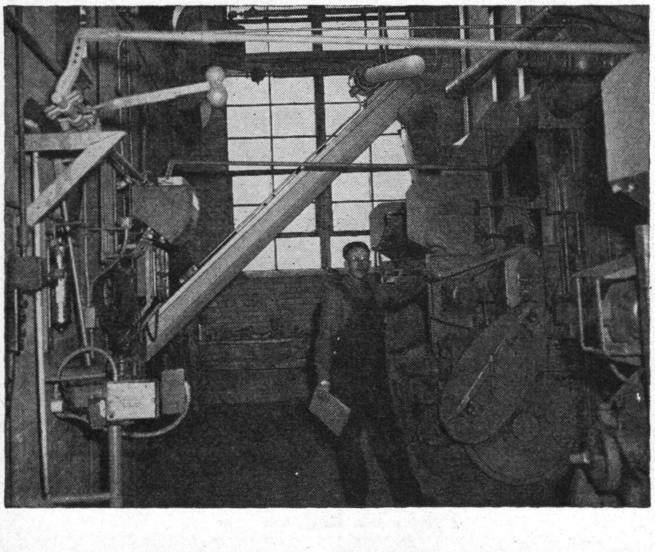
Specifications

Clearance, delivery end to ground level, wheels low position, 41 in.; wheels high position, 29 in.; length over all 18 ft.; length inclined section 6 ft.; length horizontal section 12 ft. vertical wheel adjustment, ground level to top rail, 10 in.; width hub to hub of wheels 34 in.; width horizontal section, side to side, 21 in.; thickness of horizontal section above rails 3⅜ in.; approximate weight each 1120 lbs.

Prices on Request

BIN-TO-STOKER SCREW CONVEYORS

BAUGHMAN DIRECT FEED



Model No. 215

Will pay for itself in 30 days through time and labor saved. Will last for years with a minimum of maintenance.

Designed to cut labor costs to a minimum the "Bin-To-Stoker" Screw Conveyor eliminates the drudgery of hand feeding stoker hoppers, assuring an ample supply of fuel in the feed hoppers at all times.

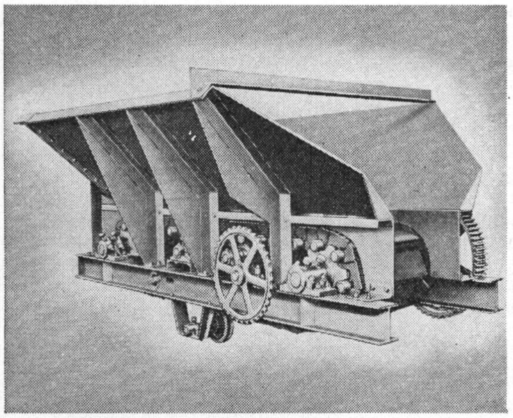
Capacity up to 1000 lbs. per minute.

Built as a complete unit in standard lengths from 10 to 40 ft. The steel body is arc welded throughout. It is stiff and strong, requiring only a nominal amount of support.

Prices on Request

APRON FEEDERS

TELSMITH STANDARD AND HEAVY DUTY



Heavy Duty Apron Feeder complete on steel frame with heavy duty steel hopper, furnished at extra charge.

While the Telsmith Standard and Heavy Duty Apron Feeders are primarily for quarry use, the Standard Unit is sometimes used in sand and gravel plants, in brick plants for handling clay and for other industrial applications. Because its weight is considerably less than the Heavy Duty Unit, it is generally used on portable and semi-portable quarry plants. The Telsmith Standard Duty Apron Feeder is often used in mining installations for feeding ore from bins to crushers.

The Telsmith Heavy Duty Apron Feeder is a rugged piece of equipment designed to withstand the most severe quarry service. The heaviest loads may be dumped on it without injury. It is recommended for feeding the primary crusher, both jaw and gyratory type, in all kinds of quarry operations either permanent or temporary.

	Standard Feeder				Heavy Duty Feeder				
Size feeder, width x basic length, in.	24x96	30x96	36x120	42x120	36x99	42x121½	48x121½	60x144	72x144
Capacity in tons per hour (Note 1)	25–100	35–140	40–200	50–275	50–200	70–280	90–360	140–560	200–800
Speed of back-gear shaft, RPM	10	10	10	10	12	12	12	10	10
HP required, 8′-0″ length (Note 2)	2	3	..	..	5	5	5	5	7½
HP required, 10′-0″ length (Note 2)	2	3	3	5	5	5	5	7½	10
HP required, 12′-0″ length (Note 2)	2	3	3	5	5	5	7½	7½	10
HP required, 14′-0″ length (Note 2)	2	3	5	5	7½	7½	7½	10	10
HP required, 16′-0″ length (Note 2)	3	5	5	7½	7½	7½	7½	10	15
Wt., basic length, lbs., about (Note 3)	3750	4230	5800	6800	12000	16000	18000	34500	39000
Wt., per ft., longer or shorter, lbs., about	250	300	400	500	1000	1250	1500	2250	2500
Maximum length, Standard Unit, ft. (Note 4)	20	20	20	20	18	18	18	16	16

Note 1—Capacity varies with speed of apron and depth of material on apron. Maximum feeder capacities shown are for continuous operation at about 12 feet per minute with a depth of material about ¾ of feeder flight width.

Note 2—Horsepower given is for maximum tonnage on a horizontal feeder of the length shown.

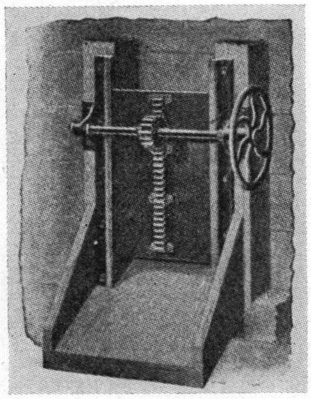
Note 3—The weight given covers a self-contained unit without hopper or skirt plates.

Note 4—For longer lengths, consult factory.

Prices on Request

BIN GATES

STANDARD RACK AND PINION



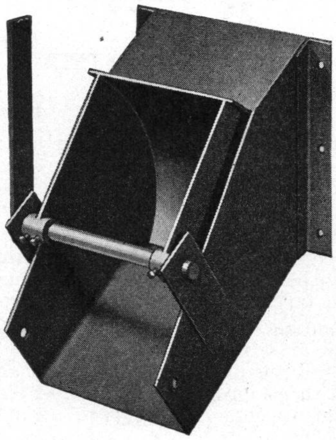
The rack and pinion ore bin gate is used for side discharge. It is particularly convenient where clearance is limited or the close control of the flow is necessary. It is substantially built and may be relied upon for excellent service even where coarse, abrasive material is handled.

It consists of steel plate doors, steel shaft, cast iron guides, hand wheel, solid cast bearings for hand wheel shaft, rack and pinion.

Nos.	Width gate, in.	Height gate, in.	Wt. each, lbs. 1 rack and pinion	Wt. each, lbs. 2 racks and pinion
1	18	24	160	180
2	20	24	170	190
3	20	30	190	220
4	24	30	220	250
5	24	36	230	270
6	30	36	250	300

Prices on Request

OVER-CUT



Closes downward on the flow of stone or sand, giving very accurate control with easy operation.

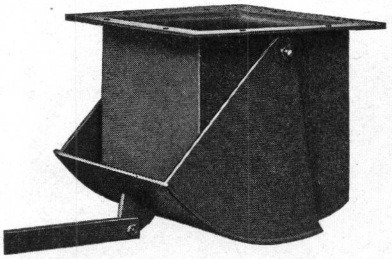
All steel construction.

Can be furnished with fixed chute only or with 6 ft. 9 in. truck loading chute or with 9 ft. 3 in. carloading chute.

Size, in.	Wt. each, lbs. With truck loading chute	Wt. each, lbs. With car loading chute	Wt. each, lbs. With fixed chute
12x18	345	430	146
16x18	550	650	185
20x18	595	720	210
24x18	690	815	285

Prices on Request

BOTTOM DISCHARGE



A single leaf gate, made of heavy welded steel plate; for stone and gravel.

This gate may be rubber lined to make it water-tight for handling wet sand.

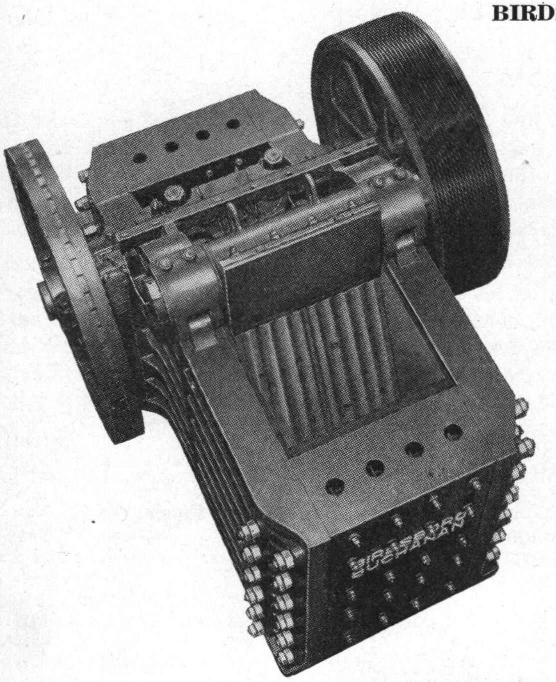
Size, in.	Clearance required, in.	Wt. each, lbs.
12x12	17	90
15x15	20	130
18x18	23	230

Prices on Request

We Shall Be Pleased to Receive Your Inquiries for Items not Shown in This Catalog.

JAW CRUSHERS

BIRDSBORO-BUCHANAN ALL STEEL



Type C—Deep Frame

In large mining and quarrying operations the methods employed in rock and ore handling have, in the last two decades, undergone radical changes.

Large masses of rock, weighing from 2 to 5 tons, or more, are now handled by the modern steam or electric shovel and loaded directly into special side or end dump cars or trucks, which are conveyed by locomotives, trucks or power drums to the crushing plant and dumped directly into the jaws of large preliminary breakers. These crushers have jaw openings of from say 24x26 in. up to 66x84 in. or larger, thus effecting a great saving in time, labor and expense over the old method of block-holding, mud-capping or sledging formerly employed in order to reduce the rock in the quarry to a proper size for feeding into the comparatively small crushers then in use, the jaw openings of which rarely exceeded 18x36 in. The development of the modern loading shovels, permitting the economical handling of large pieces of rock or ore, naturally created a demand for a larger breaker capable of receiving the largest rock that could be delivered by the shovel.

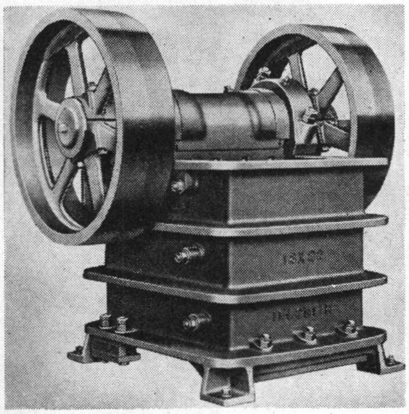
Special Features

All-steel construction—patented four-piece frame possessing great rigidity and strength—pitman made of Special Birdsboro Alloy Steel, is parted for ease in rebabbitting and adjusting, although special design insures extra long life to bearings. Under the most severe conditions Birdsboro-Buchanan Crushers run cool without excessive amounts of lubrication. Larger sizes have removable frame bearings and all sizes have spring-balanced pitman to relieve pressure on bearings and insure perfect balance at all speeds.

Note—In the list of Driving Pulleys in the table below we have specified only the Single Drive requiring flat belt. These crushers can be supplied with suitable pulleys for modern V-belt drive. Driver can be located on either side of the crusher to suit local conditions.

Type	Jaw opening, in.	Approx. tons per hour to sizes given below Size, in. — Tons	Size, in. — Tons	Size, in. — Tons	Size pulley, in.	RPM	Approx. horsepower	Shovel size, yds.	App. wt., lbs.	Appr. wt. heaviest piece, lbs.
Box—Coarse	66x84	10 — 479	12 — 572	14 — 682	180x36	85-90	250-300	4 -5	550,000	85,000
Box—Medium	60x84	8 — 330	10 — 418	12 — 495	168x36	85-90	250-300	3½-4	500,000	82,500
Box—Coarse	56x72	10 — 495	12 — 594	14 — 693	144x36	115-125	175-225	3¼-4	350,000	61,250
Box—Medium	48x72	7 — 347	8 — 396	10 — 495	120x30	115-125	150-200	3 -3½	262,000	41,350
Box—Medium	48x60	7 — 286	8 — 330	10 — 413	120x24	125-135	140-175	2½-3	240,000	39,375
Box—Coarse	46x54	8 — 330	10 — 413	12 — 495	90x36	140-150	130-160	2 -2½	210,000	39,275
Box—Medium	42x54	6 — 231	8 — 319	10 — 396	90x36	140-150	125-150	2 -2½	195,000	38,275
Box—Fine	36x54	5 — 185	7 — 231	9 — 330	90x36	140-150	125-150	2 -2½	185,000	23,000
Panel—Special	40x48	7 — 220	9 — 275	12 — 363	84x24	160-175	125-150	1½-2	125,000	25,000
Panel—Special	40x42	7 — 187	9 — 242	12 — 308	84x24	160-175	110-140	1½-2	123,000	24,800
Panel—Medium	36x54	6 — 248	8 — 330	10 — 413	84x24	160-175	125-150	2 -2½	135,000	23,000
Panel—Medium	36x48	6 — 209	8 — 286	10 — 358	84x20	160-175	115-140	1½-2	123,000	23,000
Panel—Medium	36x42	6 — 193	8 — 259	10 — 319	84x18	160-175	100-115	1 -1½	118,000	23,000
Panel—Fine	30x42	4 — 127	5 — 160	6 — 193	84x18	160-175	90-115	1 -1½	116,000	21,000
Panel—Special	36x42	8 — 220	10 — 308	12 — 358	70x24	185-200	85-100	1 -1½	74,000	13,500
Panel—Special	30x42	5 — 143	6 — 176	7 — 220	70x24	185-200	85-100	1 -1½	72,000	11,875
Panel—Medium	30x36	5 — 99	6 — 116	7 — 138	70x18	185-200	80-90	¾-1	71,000	11,875
Panel—Fine	24x42	3 — 94	4 — 127	5 — 160	70x18	210-225	85-100	¾-1	70,000	11,275
Panel—Fine	24x36	3 — 77	4 — 99	5 — 138	70x18	210-225	75-85	¾-1	68,000	11.250

TELSMITH ALL STEEL



Force-Feed Type

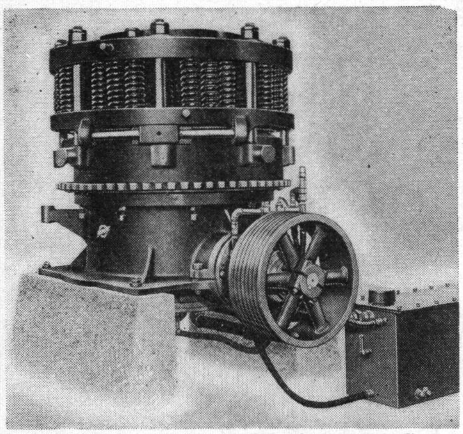
The upper part of the swinging jaw moves outward to crush the coarse rock—then retreats. As the upper outward stroke terminates, the lower portion of the jaw moves forward to complete the crushing—then recedes as a new crushing cycle begins. This crushing action has proved very effective, particularly in producing rock in the smaller sizes such as ¾, 1 and 1½ in. aggregate.

Being equipped throughout with cylindrical type roller bearings, the Telsmith Jaw Crusher can be run at a high speed. This gives a very vigorous feeding and crushing action resulting in larger capacities and a more uniform and cubical product.

Other outstanding advantages are: (1) husky box like steel frame, requiring low head room, and a massive steel pitman, both of which are reinforced with heavy ribs and annealed; (2) large diameter alloy steel shaft; (3) cylindrical roller bearings, with alloy steel rollers and races, protected by special seals; (4) reversible manganese steel jaws; (5) quick and easy adjustment of discharge opening.

Size crusher (feed opening), in.	10x16	10x21	10x30	10x36	14x24	15x38	18x32	25x36	30x42
Horsepower required	8-15	12-20	15-25	20-35	20-30	50-60	50-60	75-100	125-150
Drive pulley, diam. x face, in.	33x8½	33x8½	38x10½	38x10½	38x10½	48x12½	48x12½	60x14½	60x14½
RPM	350	350	320	320	320	275	275	250	250
Capacity in tons per hour With discharge opening, in.									
⅝	4-6	5-7	...	...	...	...	...	...	...
¾	5-7	7-9	11-15	13-18	...	...	...	...	...
1	7-9	9-12	14-20	17-24	...	...	...	...	...
1¼	8-11	11-15	18-25	22-30	14-20	...	...	...	...
1½	10-13	13-18	22-30	26-36	17-24	31-43	...	...	...
2	13-18	17-24	29-40	35-47	23-32	42-57	35-48	...	...
2½	16-22	22-30	36-50	43-59	29-40	52-71	44-60	...	...
3	.....	.....	.....	52-71	35-48	63-86	53-72	74-101	...
3½	.....	.....	.....	.....	.....	73-100	62-84	86-118	...
4	.....	.....	.....	.....	.....	.....	70-96	99-135	116-157
5	.....	.....	.....	.....	.....	.....	88-120	124-169	145-199
6	.....	.....	.....	.....	.....	.....	.....	149-203	175-239
Net wt. each, lbs.	4950	5650	9900	11000	10000	20500	19000	38000	52000

Prices on Request



GYRASPHERE CRUSHERS

TELSMITH ALL-STEEL

Spring Relief Type; Roller Thrust Bearings

Designed for large capacities and wide sizing range in secondary and tertiary crushing and produces an exceptionally well cubed, uniform product. The first section of the table, shown below, covers the Standard Gyrasphere Crusher with coarse concave. The Standard Gyrasphere Crusher can be furnished with fine concave for finer crushing, as shown in the second section of the table. Note that the fine concave involves a reduction in feed opening. Intermediate concaves can also be furnished for a range of sizing between that of the coarse and fine concaves.

The Telsmith Gyrasphere is equipped with steel feed hopper, manganese steel crushing member, spring relief (to prevent packing and breakage by tramp iron), and automatic oiling system.

Note—When no capacity is shown in the tables below for any certain discharge opening, crusher cannot be operated economically at that opening.

With Standard Concave

Nos.	24	36	48
Drive pulley—			
Diam. x face, in.	24x10	28x12	36x14
RPM	725	650	550
Width feed opening, closed side, in.	3	4½	7
Power required, HP	25–30	50–60	75–100
Cap., tons per hr. Discharge, in.			
⅜	12–20	.....	.....
½	15–25	35–60	.....
¾	20–30	50–75	85–120
1	25–40	70–100	105–150
1¼	.....	90–115	135–190
1½	.....	110–130	170–210
App. wt. each, lbs.	9100	21500	36000

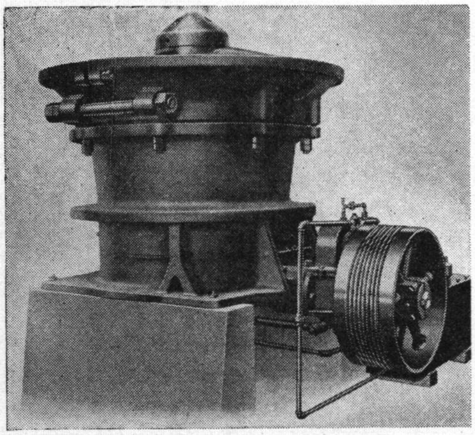
With Fine Concave

Nos.	24	36	48
Drive pulley—			
Diam. x face, in.	24x10	28x12	36x14
RPM	725	650	550
Width feed opening, open side, in.	1¾	2½	3¾
Power required, HP	25–30	60–80	125–150
Cap., tons per hr. Discharge, in.			
⅛	6–10	.....	.....
3/16	10–12	.....	.....
¼	12–15	25–30	.....
⅜	.....	30–40	50–65
½	.....	40–55	65–85
¾	.....	.....	85–120
App. wt. each, lbs.	9300	22000	37000

Prices on Request

GYRATORY BREAKERS

TELSMITH



Pillar-Shaft Type

Combines the following outstanding advantages—(a) a short structure, economical of head room; (b) steel frame and crown, guaranteed against breakage by tramp iron; (c) rigid shaft, carrying same guarantee; (d) long sleeve-type eccentric with enormous bearing areas and renewable bearing sleeves; (e) cut steel drive gears; (f) crushing cone and bowl of unusual diameter, with the largest feed and crushing areas of any gyratory breaker; (g) automatic lubrication of all bearings by oil under pressure, with apparatus for straining, settling and cooling the oil; (h) parallel crushing stroke, equal at all points of the head and exerting the full "pinch" on the big chunks, the minute they enter the bowl; (i) free discharge from base of crusher; (j) independent discharge chute, attachable at any desired position.

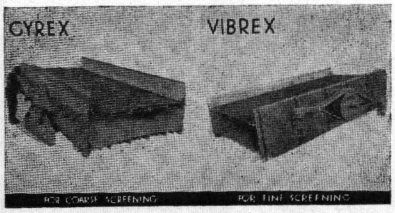
By reason of its parallel stroke and vigorous action, this machine has always excelled other breakers in output. In the current model, an improved oiling system and a roller-bearing countershaft have made it possible to further augment this large capacity by a substantial increase in speed. With the present high rate of gyration, the rock is broken by impact with a minimum consumption of power and producing a very uniform, cubical product.

Nos.		**6B**	**8B**	**10B**	**13B**	**16B**	**20B**	**25B**
Dimension of each receiving opening, in.		6¾x35	8x41	10x51	13x59	16x74	20x88	25x106
Driving pulley	Diam. x face x bore, in.	20x10x2⅞	20x12x2⅞	24x12x3⅜	30x14x3⅜	36x16x3⅞	40x20x3⅞	40x24x4⅜
	RPM	750	750	700	560	500	440	480
Horsepower required		15–20	20–25	25–30	40–50	60–75	75–90	100–125
Hourly capacity, tons—	1 in. discharge opening	18–20	.....	.....	.....	.....	.....	.....
	1¼ in. discharge opening	20–23	30–33	.....	.....	.....	.....	.....
	1½ in. discharge opening	23–26	33–36	38–44	.....	.....	.....	.....
	1¾ in. discharge opening	.....	36–40	44–50	.....	.....	.....	.....
	2 in. discharge opening	.....	.....	50–57	70–80	.....	.....	.....
	2½ in. discharge opening	.....	.....	.....	80–90	120–135	.....	.....
	3 in. discharge opening	.....	.....	.....	90–100	135–145	200–220	300–330
	3½ in. discharge opening	.....	.....	.....	.....	145–160	220–250	330–365
	4 in. discharge opening	.....	.....	.....	.....	.....	250–280	365–400
Net weight of crusher, lbs.		10000	12500	19000	29000	44500	62500	108000

Prices on Request

VIBRATING SCREENS

GYREX, VIBREX AND ELIPTEX TYPES



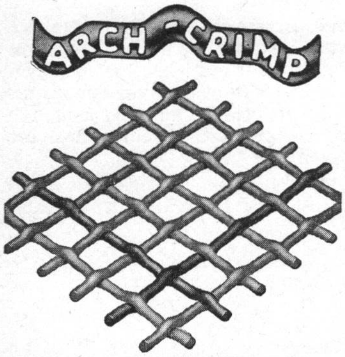
For Sizing, Shaping and Dewatering Materials

Over 500 Models

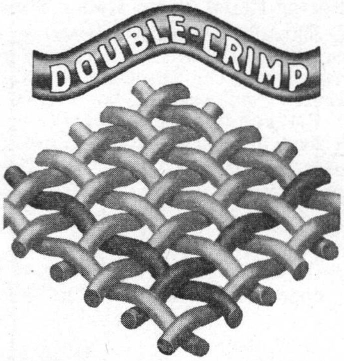
Literature, Information and Prices at Your Request

WIRE SCREEN

SUPER-LOY (HI-CARBON) SQUARE OPENING SPACE SCREEN



Usually supplied in ½ in. wide or wider, where the diameter of the wire is less than ⅓ the width of opening.



Screens where the diameter of wire is more than ⅓ the width of the openings are made of Double Crimp weave.

For Grading Coal, Coke, Gravel, Stone and Sand

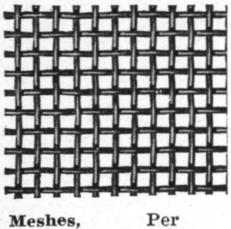
Super-Loy is for heavy-duty screens, wearing from twice to many times as long as the same weaves of ordinary steel. However, Super-Loy should not be confused with higher priced manganese steels for it costs little more than ordinary steel.

In 36 or 48 in. Widths

Width of space or clear opening, in.	Per square foot	Diam. wire, in.	Proportion of open space to total screen area	Approx. wt. per sq. ft., lbs.
3	$1.05	½	73.5%	4.62
2¾	1.00	7/16	74.4%	3.88
2½	1.05	7/16	72.4%	4.22
2¼	1.20	7/16	70.1%	4.62
2	1.15	⅜	70.9%	3.84
1¾	1.20	⅜	67.8%	4.30
1½	1.00	5/16	68.5%	3.50
1⅜	1.05	5/16	66.4%	3.77
1¼	1.15	5/16	64.0%	4.08
1⅛	.90	.250	66.9%	2.96
1	.95	.250	64.0%	3.26
⅞	.90	.225	63.3%	3.01
¾	.80	.207	61.4%	2.93
⅝	.75	.192	58.5%	2.97
½	.75	.177	54.5%	3.06
7/16	.73	.162	53.2%	2.90
⅜	.70	.148	51.4%	2.79
5/16	.70	.135	48.8%	2.72
¼	.75	.120	45.6%	2.62
3/16	.78	.092	45.1%	1.60
⅛	.83	.072	40.3%	1.79

WIRE SCREEN CLOTH

SQUARE MESH, MARKET GRADE, BRASS

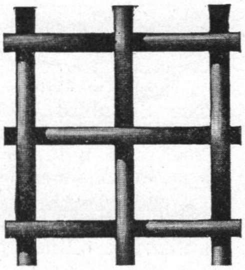


Usual Stock Width 36 in.

Meshes, per inch	Per sq. ft.	Diam. wire, in.	Width opening, in.	Open area	Wt. per 100 sq. ft., lbs.
2	$0.65	.063	.437	76.4%	56.6
3	.75	.054	.279	70.1%	62.7
4	.75	.047	.203	65.9%	63.6
6	.70	.035	.132	62.7%	53.2
8	.65	.028	.097	60.2%	45.4
10	.65	.025	.075	56.3%	45.5
12	.65	.023	.060	51.8%	46.6
14	.65	.020	.051	51.0%	41.1
16	.65	.018	.0445	50.7%	38.1
18	.65	.017	.0386	48.3%	38.4
20	.60	.016	.0340	46.2%	38.0
30	.70	.0135	.0198	35.3%	43.5
40	.70	.010	.0150	36.0%	30.5
50	.85	.009	.0110	30.3%	31.4
60	.85	.008	.0087	27.2%	30.3
80	1.25	.0055	.0070	31.4%	18.7
100	1.75	.0045	.0055	30.3%	15.7

WIRE SCREEN CLOTH

STANDARD HEAVY STEEL, DOUBLE CRIMP

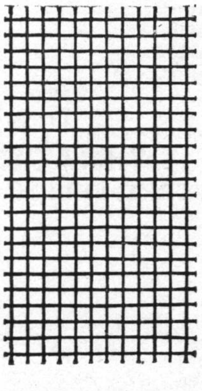


In 36 or 48 in. Widths

Mesh, C to C of wire, in.	Per sq. ft.	Diam. wire, in.	Width open-ing, in.	Open area	Wt. per 100 sq. ft., lbs.
1	$0.30	.135	.865	74.8%	117.7
¾	.25	.105	.645	73.9%	95.0
¾	.17	.080	.670	79.8%	54.9

Meshes per inch	Per sq. ft.	Diam. wire, in.	Width opening, in.	Open area	Wt. per 100 sq. ft., lbs.
2	$0.45	.135	.365	53.3%	241.7
2	.35	.105	.395	62.4%	144.2
2	.23	.080	.420	70.6%	83.0
2	.18	.063	.437	76.4%	51.4
2¼	.50	.135	.309	48.3%	274.3
2½	.55	.135	.265	43.9%	307.8
2½	.45	.120	.280	49.0%	240.6
3	.60	.135	.198	35.3%	377.6
3	.55	.120	.213	40.8%	293.9
3	.35	.080	.253	57.6%	126.4
3	.24	.063	.270	65.6%	17.6
4	.30	.063	.187	56.0%	104.8
4	.22	.047	.203	65.9%	57.6
4	.16	.035	.215	74.0%	31.7
5	.32	.054	.146	53.3%	96.7
5	.23	.041	.159	63.2%	54.9
6	.50	.063	.104	38.9%	163.0
6	.34	.047	.120	51.8%	88.2
6	.23	.035	.132	62.7%	48.1
6	.14	.028	.139	69.6%	30.5
8	.55	.047	.078	38.9%	120.9
8	.34	.035	.090	51.8%	65.1
8	.23	.028	.097	60.2%	41.1
10	.65	.047	.053	28.1%	118.4
10	.55	.035	.065	42.3%	83.1
10	.32	.028	.072	51.8%	52.1
12	.95	.047	.036	18.7%	185.1
12	.60	.035	.048	33.2%	102.1
12	.42	.028	.055	43.6%	63.5
12	.32	.025	.058	48.4%	50.1
12	.20	.020	.063	57.2%	31.6
14	.70	.035	.036	25.4%	116.1
14	.65	.032	.039	29.8%	100.5
14	.43	.025	.046	41.5%	59.3
14	.30	.023	.048	45.2%	49.8
16	.62	.028	.0345	36.5%	83.6
16	.52	.025	.0375	36.0%	68.9
18	.40	.020	.0356	41.1%	49.0
18	.32	.018	.0376	45.8%	39.2
18	.27	.017	.0386	48.3%	34.8
18	.24	.016	.0396	50.8%	30.7
20	1.15	.028	.0220	19.4%	109.3
20	.67	.023	.0270	29.2%	70.8
20	.52	.020	.0300	36.0%	55.2
20	.42	.018	.0320	41.0%	44.1
24	.30	.014	.0277	44.2%	31.8
30	.45	.0135	.0198	35.3%	37.8
30	.40	.013	.0203	37.8%	34.8
35	.60	.0135	.0151	27.9%	45.2
35	.50	.013	.0156	29.8%	41.6
40	.90	.0135	.0115	21.2%	53.0
40	.75	.013	.0120	23.0%	48.8
40	.50	.010	.0150	36.0%	27.6
50	.70	.009	.0110	30.3%	28.4
60	1.00	.0075	.0092	30.5%	23.7

TINNED MILL SCREEN

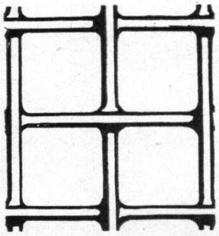


Usual Stock Width 40 in.

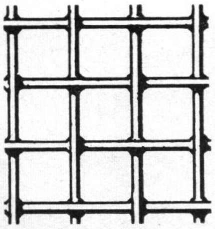
Meshes per inch	Per sq. ft.	Diam. wire, in.	Width open-ing, in.	Open area	Wt. 100 sq. ft., lbs.
10	$0.40	.020	.080	64.0%	26.1
12	.40	.018	.065	60.8%	25.5
14	.40	.017	.054	57.2%	26.6
16	.45	.016	.0465	55.4%	27.1
18	.48	.015	.0406	53.4%	26.8
20	.50	.014	.0360	51.8%	26.1
24	.55	.013	.0287	47.4%	27.2
30	.60	.0095	.0238	51.0%	18.0
40	.90	.0085	.0165	43.6%	19.5
50	1.10	.0075	.0125	40.8%	19.2
60	1.50	.0065	.0102	37.5%	17.4

HARDWARE WIRE CLOTH

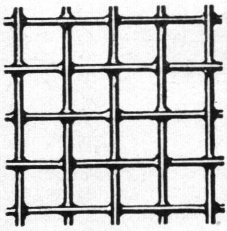
STANDARD



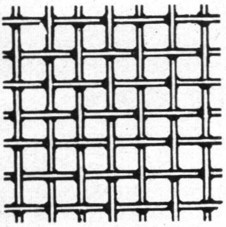
2x2



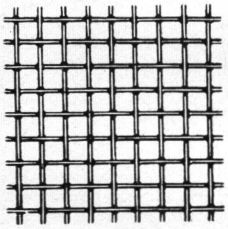
3x3



4x4



6x6



8x8

Welded Selvage

Symmetrical design produces a precise, even edge. Easier to tack into wood frames; easier to weld to steel frames.

True, uniform mesh.

Galvanized After Weaving

Galvanizing eliminates mesh distortion, for the mesh is pulled through the "hot dip" bath of pure zinc in such a way that the wires stay in perfect alignment. The cloth has a bright, smooth, non-porous coating.

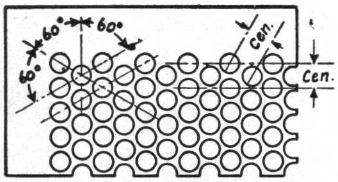
Mesh represents the number of squares to a lineal inch.

Width, in.	Per roll	Wt. per roll, lbs.
2x2 Mesh, No. 19 Gauge Wire		
24	$30.00	60
30	36.80	75
36	43.80	90
3x3 Mesh, No. 21 Gauge Wire		
24	$33.60	60
30	41.20	75
36	49.00	90
4x4 Mesh, No. 23 Gauge Wire		
24	$33.60	54
30	43.30	67
36	51.60	81
6x6 Mesh, No. 25 Gauge Wire		
24	$40.00	54
30	49.60	67
36	68.80	81
8x8 Mesh, No. 27 Gauge Wire		
24	$44.50	52
30	54.80	65
36	65.40	76

100 lineal feet in a roll.

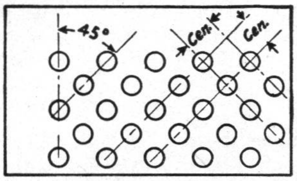
PERFORATED METALS

TYPES OF PERFORATIONS



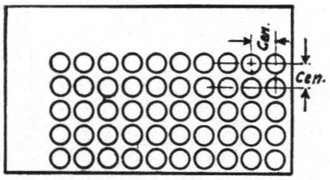
Round Holes—Staggered

Note that the holes are staggered on 60° angles which makes all the bridges the same width. This provides maximum strength and uniform wear.



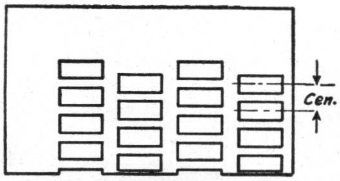
Round Holes—Diagonal

For screening purposes it is not as efficient as the staggered arrangement shown above because the bridges are not uniform width.



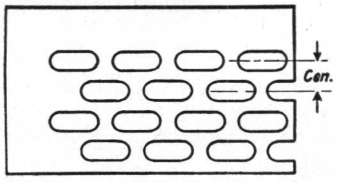
Round Holes—Straight

Not generally used for screening purposes except for very small holes, but is sometimes preferred for other reasons. This arrangement is also referred to as "on the square."



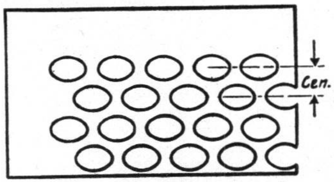
Slots—End Staggered

Slots are elongated holes with square ends. As shown here the slots are end staggered, which arrangement is also known as "alternate end" (AE), or "hit and miss endways" (H&ME).



Oblongs—Side Staggered

Oblong holes have rounded ends. The arrangement here shows the holes side staggered, which is also referred to as "hit and miss sideways" (H&MS).



Ovals—Side Staggered

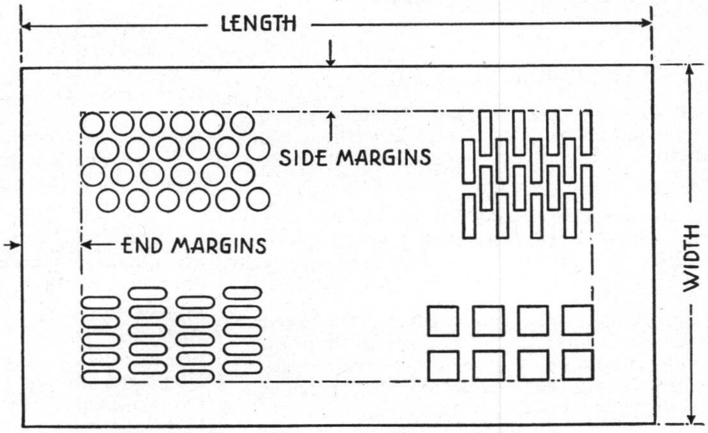
Oval holes are identified by rounded ends and rounded sides. As shown here the holes are arranged side staggered.

MATERIALS WHICH WE PERFORATE

We are prepared to perforate nearly every material which can be obtained in the form of coils, sheets or plates. In thickness, material as thin as tissue paper, foil and cellophane, and as heavy as steel one inch thick can be perforated. In width, the material can be in narrow bands or in wide plates. In length, the material can be in short sections or in long coils.

A Brief List of Materials Most Commonly Perforated

Aluminum
Armco Iron
Brass
Bronze
Copper
Everdur
Galvanized Steel
Lead
Monel
Muntz
Nickel
Nickel Silver
Stainless Steel
Steel
Terne Plate
Tin Plate
Toncan Iron
Zinc



INSTRUCTIONS FOR ORDERING

When material is perforated to order, it is generally made with blank margins around the edges. It should be kept in mind, however, that blank margins generally increase the cost and wide margins should be avoided if possible.

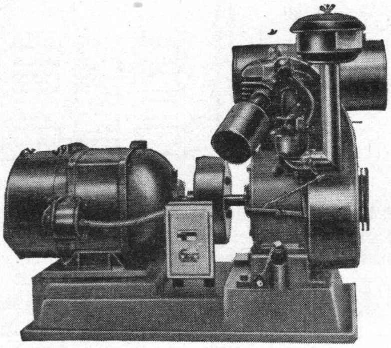
Specifications

1—Kind, gauge and quality of material.
2—Number and dimensions of sheets.
3—Size, shape, arrangement and centers of holes.
4—Width of all margins.
5—Advise if elongated holes should run lengthwise or crosswise of sheet.
6—Advise direction of flow of material over sheet.
7—If in doubt send sketch or sample.

Prices on Request

ELECTRIC LIGHT PLANTS

UNIVERSAL "MATCHED UNIT"



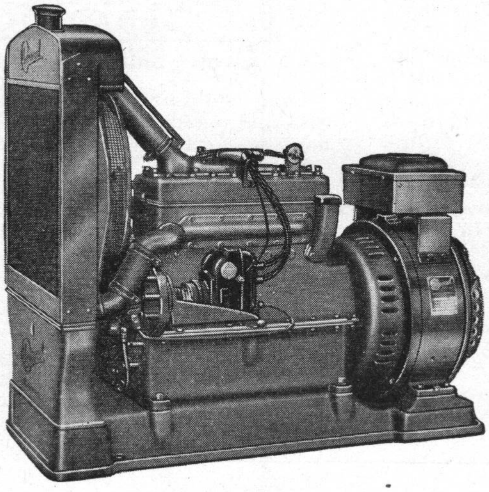
Air Cooled; 1 Cylinder Engine

Available in 250 and 350 watt sizes, direct current; 550 watt size, alternating current, and 700, 1200 and 2000 watt sizes, both direct current and alternating current types.

These models are for manual or automatic service, powered with single cylinder, four cycle gasoline engines for applications requiring compact construction, minimum weight and easily portable equipment.

The larger 2000 watt sizes are very popular where installations require enough power to operate electric motors in addition to current for regular lighting, appliances, etc.

Complete Information and Prices on Request



Water Cooled

Available in 3000 watt size, 2-**cylinder engines,** in 6000 and 9000 watt sizes, **4-cylinder engines,** and in 12500, 15000, 20000 and 25000 watt sizes, **6-cylinder engines.** All in direct current and alternating current types.

Water cooled models for gasoline or natural gas operation are powered with ruggedly constructed engines, direct-connected through flexible coupling to AC or DC generators and substantially mounted to a cast iron sub-base.

If your electrical requirements are from medium to comparatively large this is the electric plant for you. Here in small size is big ability—to provide abundant power for farms, estates, resorts, schools, camps, towns, and for emergency service in hospitals, theaters and floodlighting on fire trucks.

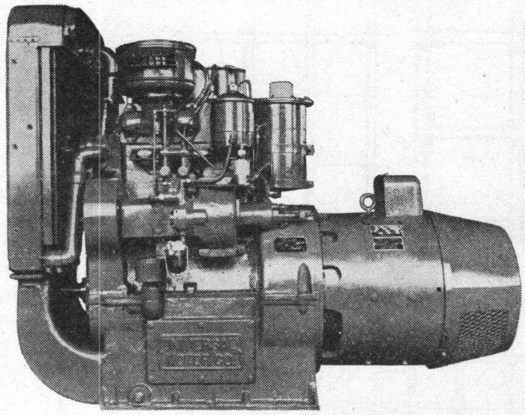
The heavy duty motor is designed to provide a generous reserve power for overload requirements.

Safe and easy to operate—requires a minimum of attention.

Complete Information and Prices on Request

ELECTRIC GENERATING SETS

UNIVERSAL DIESEL POWERED



2000 to 36000 Watts

2000 watt size, 1-cylinder air cooled engine; 5000 watt size, 1-cylinder water cooled engine; 10000 watt size, 2-cylinder water cooled engine; 15000 and 18000 watt sizes, 3-cylinder water cooled engine; 30000 and 36000 watt sizes, 6-cylinder water cooled engine all in direct current and alternating current types.

These 100% full diesel electric generating sets meet all requirements for low-cost electric powers. Small for their big ability, they are every economical. Driven by 4-cycle diesel engines they operate on common diesel fuels. For manual electric starting or automatic service.

Complete Information and Prices on Request

POWER UNITS

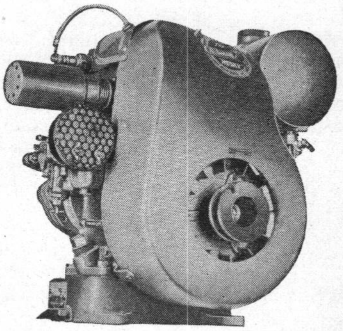
Both Gas and Diesel Operated

Air or water cooled.

Complete Information and Prices on Request

GASOLINE ENGINES

CUSHMAN "HUSKY" AIR COOLED



4 Cycle, Single Cylinder, L Head

Constructed to produce more power and stand up under harder service. They are for the user demanding sturdy, reliable and economical power hour after hour and day after day.

Oversize alloy valves and valve seat inserts, heavy drop forged heat treated crankshaft; forged alloy steel cam shaft, hardened and ground; heavy roller main bearings; all working parts are fully enclosed and thoroughly lubricated.

Cast aluminum cylinder head with cooling fins spaced for maximum cooling and high head conductivity. Crank case is a one-piece gray iron casting of high tensile strength. Solid skirt, heavy duty type aluminum alloy piston.

Cooled by air blast around cylinder, overhead and behind valves from flywheel fan.

Crankshaft extension 2⅜ in. long, .750 in. diameter, with $\frac{3}{16}$x$\frac{3}{32}$x1⅝ to 2 in. keyway.

Standard Equipment

"Clockwise rotation" facing flywheel, rope starter, dry type air cleaner, cylindrical type muffler, centrifugal Flyball type governor, float feed carburetor with bowl type gasoline filter.

Model Nos.	**M6**	**M7**	**M8**
Bore, in.	2⅜	2⅝	2⅞
Stroke, in.	2¾	2¾	2¾
Displacement, cu. in.	12.3	14.9	17.8
Compression ratio	4.7	5.4	5.9
Horsepower	1.5–3.2	2.3-4.6	2.8–5.2
Net wt. each, lbs.	63	65	67
Shipping wt. each, lbs.	83	85	87
With Clutch ... Each	$....	.....	.....
Without Clutch ... Each	....	.....	.....

One in a crate.

Prices on Request

GASOLINE ENGINES

WISCONSIN HEAVY DUTY, AIR COOLED

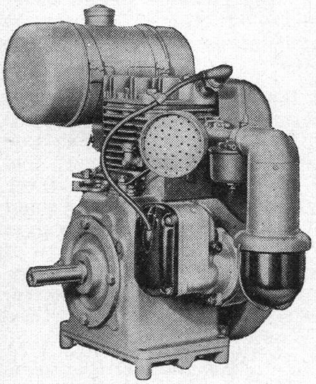
Rotation is counter-clockwise facing power take-off shaft. Large fan cast in flywheel supplies a strong blast of air which is forced across and around the cylinder and head. Will cool engine in the most extreme temperatures. Pump circulated splash lubrication system.

Moisture and dust-proof outside high tension magneto with impulse coupling; produces a strong spark for easy starting. Built-in mechanical fly-ball type governor, providing very close speed regulation. Efficient industrial type carburetor with automatic choke release provides easy starting and maximum power with minimum fuel consumption. Efficient oil bath type air cleaner. Sediment bowl type fuel filter.

Single Cylinder, Four Cycle Models

Aluminum alloy piston, babbitt lined aluminum alloy connecting rod; removable cylinder head of aluminum; cast iron crank case; nickel chrome molybdenum exhaust valve seat insert.

Rugged forged steel counter-balanced crankshaft mounted on oversize tapered roller bearings.



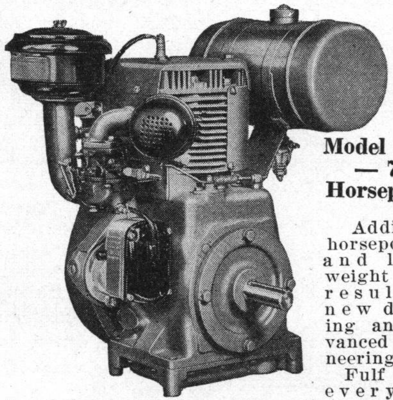
Models ABN and AKN—2 to 6 Horsepower

The last word in engine development brings you the maximum HP in a most compact, light-weight design without sacrificing the heavy duty features traditional in all Wisconsin models. Fuel tank capacity 1 gal.; oil required in reservoir 1¾ pints.

Available as **Standard** engine; or with **Clutch Assembly**, or **Spur Gear** or **Chain Reduction.**

Models	**ABN**	**AKN**
Bore, in.	2½	2⅞
Stroke, in.	2¾	2¾
Displacement, cu. in.	13.5	17.8
Horsepower at 1600 RPM	2.2	3.0
1800 RPM	2.5	3.5
2000 RPM	2.7	4.0
2200 RPM	3.1	4.4
2400 RPM	3.4	4.7
2600 RPM	3.7	5.1
2800 RPM	3.9	5.4
3000 RPM	4.2	5.6
3200 RPM	4.4	5.8
3400 RPM	4.5	5.9
3600 RPM	4.6	6.0

Net weight, standard engine, **76 lbs.**



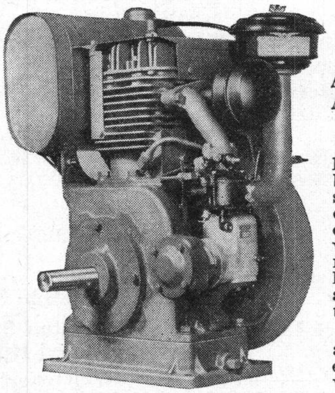
Model AEN — 7½ Horsepower

Additional horsepower and lighter weight are results of new designing and advanced engineering. Fulfills every demand for heavy duty, all weather service.

Fuel tank capacity 1.7 gals.; oil required in reservoir 3 pts.

Available as **Standard** engine; or with **Clutch Assembly, Clutch-Reduction Assembly,** or **Spur Gear** or **Chain Reduction.**

Model	**AEN**
Bore, in.	3
Stroke, in.	3¼
Displacement, cu. in.	23
Horsepower at 1600 RPM	4.5
1800 RPM	5.1
2000 RPM	5.8
2200 RPM	6.4
2400 RPM	6.8
2600 RPM	7.2
2800 RPM	7.4
3000 RPM	7.5
Net wt. standard engine, lbs.	110

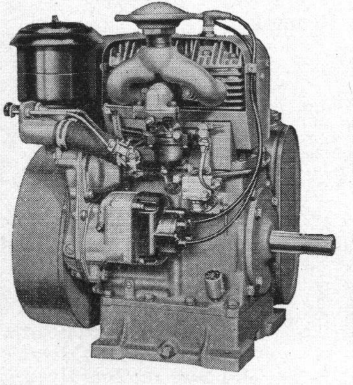


Models AGH and AEH, AFH, AHH — 4 to 9 HP

A husky little giant built to stand up under the hardest service, with a minimum of upkeep, cost and attention.

Avaliable as **Standard** engine; or with **Clutch Assembly, Clutch-Reduction Assembly** or **Spur Gear** or **Chain Reduction.**

Models	**AEH**	**AFH**	**AGH**	**AHH**
Bore, in.	3	3¼	3½	3⅝
Stroke, in.	3½	4	4	4
Displacement, cu. in.	23	33.2	38.5	41.3
Fuel tank, gals.	1½	2¾	2¾	2¾
Oil, pts.	3	4½	4½	4½
Horsepower—				
1400 RPM	3.3	5.3	6.4	6.8
1600 RPM	3.9	6.0	7.2	7.7
1800 RPM	4.4	6.6	7.8	8.5
2000 RPM	4.9	7.0	8.2	9.0
2200 RPM	5.4	7.2	8.4	9.2
2400 RPM	5.7	...	...	...
2600 RPM	6.1	...	...	...
Net wt. std. engine, lbs.	130	180	180	180



Models TE and TF — Two-Cylinder, Four Cycle

Aluminum alloy pistons; forged steel connecting rods; nickel iron cylinders and aluminum alloy cylinder head, cast in pairs; Moly iron valve seat inserts. Counter-balanced heat treated drop forged crankshaft.

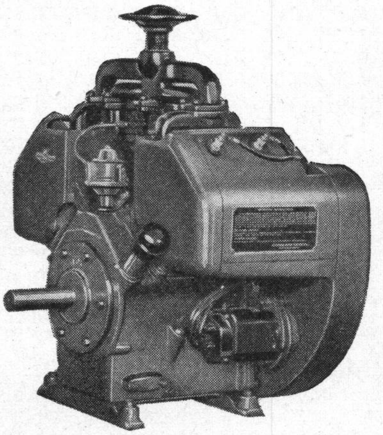
Long life and efficient, dependable service insured.

Available as **Standard** engine with or without side mount fuel tank, as **Standard Power Unit,** or with **Clutch Assembly or Clutch-Reduction Assembly.**

RPM	1400	1600	1800	2000	2200	2400	2600
HP, Model TE	7.2	8.3	9.3	10	10.6	10.9	11.2
HP, Model TF	8.6	9.9	11.1	12	12.6	13	13.3

Models	**TE**	**TF**
Bore, in.	3	3¼
Stroke, in.	3¼	3¼
Displacement, cu. in.	45.9	53.9

Net weight, standard engine, 220 lbs.



Models VE4, VF4 and VP4—V-Type, Four-Cylinder, Four Cycle

Aluminum alloy pistons; forged steel connecting rods; nickel iron cylinders and cast iron cylinder head, cast in pairs; moly iron valve inserts. Dynamically balanced heat treated forged crankshaft.

Modern, heavy duty engines to meet all requirements.

Available as **Standard** engine, with or without side mount tank; **Standard Power Unit,** or with **Clutch Assembly** or **Clutch-Reduction Assembly.**

RPM	1400	1600	1800	2000	2200	2400
HP, Model VE4	13	15	17	18.7	20.5	21.5
HP, Model VF4	15	17.5	19.5	21	23	25
HP, Model VP4	23.5	26.8	29	30.2	31	..

Models	**VE4**	**VF4**	**VP4**
Bore, in.	3	3¼	3½
Stroke, in.	3¼	3¼	4
Displacement, cu. in.	91.9	107.7	154
Net wt., standard engine, lbs.	295	295	420

All above, Prices on Request

AIR LINE OILERS

GARDNER-DENVER AUTOMATIC

Safeguards Rock Drill Lubrication

Here's positive protection against running rock drills without adequate lubrication. When all the oil in the Automatic Air Line Oiler has been used, air in the line automatically shuts off. Consequently, there is absolutely no chance for drills to run when dry. A carefully metered flow of atomized oil assures smoother lubrication with lower oil consumption—increases the operating efficiency of all air-actuated equipment.

Operates in Any Position—No. L012 Lines Oiler operates equally well in any position, either vertically or horizontally.

Used with a Wide Range of Tools—No. L012 will lubricate any pneumatic equipment using from 25 to 500 cu. ft. of air per minute.

Easy to Refill—It is not necessary to shut off line air in order to refill No. L012.

	Each
No. L012—Cap. 1 pt. of oil, 25-500 cu. ft. per minute; wt. each 13 lbs.	$.....

One in a box.

Price on Request

USEFUL INFORMATION

Cubic Feet of Free Air Required to Run One Drill of Size and at the Pressure Stated Below

Gauge pressure	Cylinder Diameter of Drill, Inches						
	2	2¼	2½	2¾	3	3⅛	3 3/16
60	50	60	68	82	90	95	97
70	56	68	77	93	102	108	110
80	63	76	86	104	114	120	123
90	70	84	95	115	126	133	136
100	77	92	104	126	138	146	149

Gauge pressure	Cylinder Diameter of Drill, Inches						
	3¼	3½	3⅝	4¾	5	5½	...
60	100	108	113	130	150	164	...
70	113	124	129	147	170	181	...
80	127	131	143	164	190	207	...
90	141	152	159	182	210	230	...
100	154	166	174	199	240	252	...

Multipliers to Determine Capacity of Compressor Required to Operate from 1 to 70 Rock Drills at Altitudes Compared with Sea Level

Altitude above sea level	Number of Drills									
	1	2	3	4	5	6	7	8	9	10
	Multipliers									
0	1.	1.8	2.7	3.4	4.1	4.8	5.4	6.	6.5	7.1
1000	1.03	1.85	2.78	3.5	4.22	4.94	5.56	6.18	6.69	7.3
2000	1.07	1.92	2.89	3.64	4.39	5.14	5.78	6.42	6.95	7.6
3000	1.10	1.98	2.97	3.74	4.51	5.28	5.94	6.6	7.15	7.81
4000	1.14	2.05	3.08	3.88	4.67	5.47	6.15	6.84	7.41	8.09
5000	1.17	2.10	3.16	3.98	4.8	5.62	6.32	7.02	7.61	8.31
6000	1.20	2.16	3.24	4.08	4.9	5.76	6.48	7.2	7.8	8.52
7000	1.23	2.21	3.32	4.18	5.04	5.9	6.64	7.38	7.99	8.73
8000	1.26	2.27	3.4	4.28	5.17	6.05	6.8	7.56	8.19	8.95
9000	1.29	2.32	3.48	4.39	5.29	6.19	6.96	7.74	8.38	9.16
10000	1.32	2.38	3.56	4.49	5.41	6.34	7.13	7.92	8.58	9.37
12000	1.37	2.47	3.7	4.66	5.62	6.57	7.4	8.22	8.9	9.73
15000	1.43	2.57	3.86	4.86	5.86	6.86	7.72	8.58	9.3	10.15

Altitude above sea level	Number of Drills								
	12	15	20	25	30	40	50	60	70
	Multipliers								
0	8.1	9.5	11.7	13.7	15.8	21.4	25.5	29.4	33.2
1000	8.34	9.78	12.05	14.1	16.3	22.	26.26	30.3	34.2
2000	8.67	10.17	12.52	14.66	16.9	22.9	27.28	31.46	35.52
3000	8.91	10.45	12.87	15.07	17.38	23.54	28.05	32.34	36.52
4000	9.23	10.83	13.34	15.62	18.01	24.4	29.07	33.52	37.8
5000	9.48	11.12	13.69	16.03	18.49	25.04	29.84	34.4	38.84
6000	9.72	11.4	14.04	16.44	18.96	25.68	30.6	35.4	39.84
7000	9.96	11.68	14.39	16.85	19.43	26.32	31.36	36.16	40.84
8000	10.21	11.97	14.74	17.26	19.9	26.96	32.13	37.04	41.83
9000	10.45	12.26	15.09	17.67	20.38	27.6	32.9	37.92	42.83
10000	10.69	12.54	15.44	18.08	20.86	28.25	33.66	38.8	43.82
12000	11.1	13.02	16.03	18.77	21.64	29.32	34.94	40.28	45.48
15000	11.58	13.58	16.73	19.59	22.59	30.6	36.46	42.04	47.47

GARDNER-DENVER AIR OR GAS RECEIVERS AND PRESSURE TANKS

A.S.M.E. CODE

Receivers are furnished complete with safety valves, pressure gauges, and drain cocks.

When receivers are sold with compressors, the inlet opening of the tank should be the same size as the compressor discharge.

The sizes given for inlet and outlet air openings are maximum. If special openings smaller than standard are wanted, it should be ordered, so that reducers can be furnished. A short delay in shipment will be necessary in this case.

Where air storage tanks are to be selected for use in connection with automatic start and stop control, the receiver should be at least double the capacity shown in the below table. The receivers are rated for continuous operation of compressors equipped with regular unloaders.

For prompt and accurate delivery, the order must be made out definitely and clearly. Advise whether receiver is to be mounted in vertical or horizontal position. Sizes 42 inches x 10 feet and smaller are furnished for vertical mounting; 48 inches x 12 feet and larger, for horizontal mounting, unless otherwise specified. Give working pressure so that safety valves can be set at proper blow-off pressure. Unless otherwise specified, all safety valves will be set for the working pressure shown below and will be of no protection to a low pressure compressor. Be sure to select receiver sizes with openings as large or larger than the compressor discharge openings. Never reduce the size of the compressor discharge pipe.

It is the plan of the American Society of Mechanical Engineers to have their code for Unfired Pressure vessels accepted by all states, insurance companies and municipalities, the object being to have all tanks of uniform construction specifications. It must be assumed that, until further notice, Standard A.S.M.E. receivers are not accepted in Massachusetts, or the United Kingdom of Great Britain including its colonies and dominions.

Nos.	*A.S.M.E. Std., each	Diam., in.	Lgth., ft.	Work. pres., lbs.	**Compressor capacity, lbs.	Ap. contents, cu. ft.	Approx. wt., lbs.
B-1	$.....	12	3	150	30	2.4	90
B-2	.....	14	4	150	60	4	125
R-3	.....	18	6	150	95	11	410
R-4	.....	24	6	125	185	19	725
R-5	.....	30	7	125	305	35	960
R-6	.....	36	8	125	450	57	1475
R-7	.....	42	10	125	640	96	2400
R-8	.....	48	12	125	1275	152	3900
R-9	.....	54	14	125	1900	224	5000
R-10	.....	60	14	125	3000	254	6075
R-11	.....	66	18	125	3000 Upward	396	8375

Prices on Request

Nos.	Thick. of shell in.	Thick. of top head, in.	Thick. of bottom head, in.	No. of safety valves	Diam. of safety valves, in.	Diam. of inlet and outlet openings, in.	Type of openings for cleaning
B-1	⅛	9/64	9/64	1	½	† 1½	None
B-2	⅛	9/64	9/64	1	¾	† 1½	2 Handholes near Head
R-3	3/16	17/64	3/16	1	1	† 3	2 Handholes near Head
R-4	¼	⅜	¼	1	1½	† 3	Manhole in Top Head
R-5	¼	7/16	17/64	1	2	† 4	Manhole in Top Head
R-6	19/64	7/16	5/16	1	2½	† 6	Manhole in Top Head
R-7	23/64	½	23/64	1	3	† 6	Manhole in Top Head
R-8	13/32	9/16	13/32	2	3	‡ 8	Manhole in Top Head
R-9	⅜	9/16	7/16	3	3	‡10	Manhole in Top Head
R-10	13/32	½	½	3	3	‡10	1 Manhole in Shell
R-11	7/16	9/16	9/16	3	3	‡10	1 Manhole in Shell

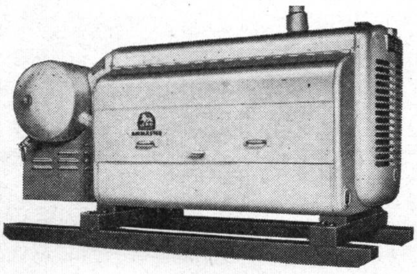
*Built in strict accordance with the American Society of Mechanical Engineers Boiler Construction Code for Unfired Pressure Vessels, section 8. Sizes with letter B are brazed; with letter R, riveted.

**Based on actual air delivered up to rated working pressures. Compressor capacity ratings that tanks may be used for should not be exceeded more than 10%. The ratings are set by the American Society of Mechanical Engineers.

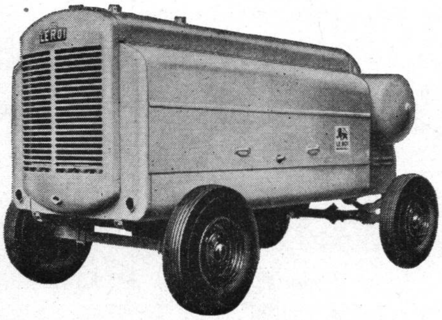
†Screwed openings furnished. ‡Flanged openings furnished.

PORTABLE AIR COMPRESSORS

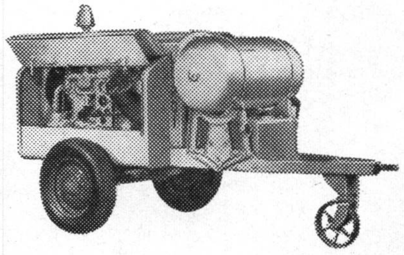
LE ROI AIRMASTER



Type A Mounting



Type C Mounting



Type E Mounting

Portable Air Power at Its Best

Seven Sizes—All Popular Mounting Styles—Gasoline or Fuel-Diesel Powered

Seven sizes are available—60, 85, 105, 160, 210, 315 and 500 CFM; in popular mounting styles to suit every job requirement. On gasoline models Le Roi manufactures both the engine and the compressor, assuring quality and unsurpassed performance from the complete unit. Two-wheel models have as standard equipment a retractable caster wheel built into the towing tongue.

Airmaster Features

Exclusive Econotrol saves fuel by adjusting engine speed to the demand for air. Also maintains higher average working pressures so that air tools do more work.

Cushioned, Super-Finished Airmaster Valves provide the most efficient, trouble-free means of delivering air. All valves are 100% interchangeable. They are individually magnafluxed, and the accuracy of their seating surfaces is measured in nucrons, accounting for their long life and high efficiency.

New Intercooler Design guarantees drier, cooler, oil free air. Hose lasts longer; does not clog drills, permitting them to work efficiently and effectively.

Electric Hour Meter keeps track of compressor operating time.

Push-Button Electric Starting gives you air quickly and easily.

Automotive Steering and Semi-Elliptical Spring Suspension make possible easy maneuvering and high-speed towing.

Sturdy Unit Construction provides trouble-free, long-life performance.

Full-length Tool Boxes and Lockable Side Panels protect your tools.

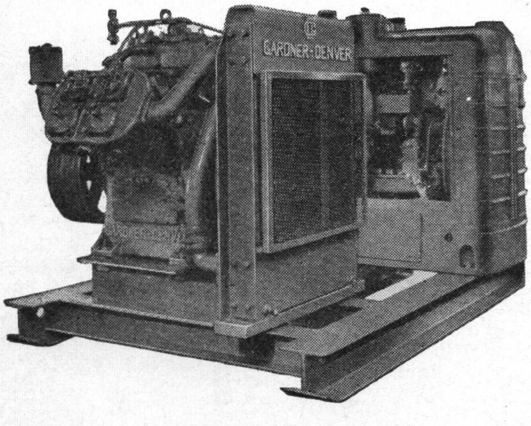
Condensed Airmaster Specifications

Model Nos.	**60G1**	**85G1**	**105G1**	**105G2**	**105D2**	**160G2**	**160D2**	**210G2**	**210D2**	**315G2**	**315D2**	**500D2**	**600D2**
Cap., CFM (100 lbs.)	60	85	105	105	105	160	160	210	210	315	315	500	600
No. of stages, pressure	1	1	2	2	2	2	2	2	2	2	2	2	2
No. of cylinders	2	2	2	2	2	3	3	3	3	6	6	6	6
Piston speed, FPM	700	700	734	734	734	734	734	734	734	734	734	833	1050
Speed, RPM	1050	1050	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1200
Engine—Type	Gas	Gas	Gas	Gas	Diesel	Gas	Diesel	Gas	Diesel	Gas	Diesel	Gas	Diesel
Make	Le Roi	Le Roi	Le Roi	Le Roi	IHC	Le Roi	IHC	Le Roi	IHC	Le Roi	IHC	Le Roi	Murphy
Model	D176	D201	D226	D226	UD6	D382	UD14A	D471	UD14A	RX1	UD18A	D1300	ME66
Displacement, cu. in.	176	201	226	226	248	382	461	471	461	1002	691	1246	1103
No. of cylinders	4	4	4	4	4	4	4	4	4	4	6	6	6
Bore, in.	3¾	4	4	4	3⅞	4½	4¾	5	4¾	6¾	4¾	5¾	6
Stroke, in.	4	4	4½	4½	5¼	6	6½	6	6½	7	6½	8	6½
Side tool boxes, area, sq. ft.	5½	5½	5½	8	8	9	9	9	9	13	13	16	16
Wt. each, lbs.													
"A" skid mounting	1740	1890	1740	2770	3470	4205	4805	4315	4915	7200	7500	12500	11600
"B" 4 steel wheels	.....	.....	.....	3330	4030	4695	5295	4805	5405	7850	8150	14000	13100
"C" 4 pneu. wheels	.....	.....	.....	3300	4000	4695	5295	4805	5405	7750	8050	13540	12640
"E" 2 pneu. wheels	1990	2140	1990	3090	3790	4445	5045	4605	5155	....	....	.....	.....

Prices on Request

ELECTRIC MOTOR DRIVEN AIR COMPRESSORS

GARDNER-DENVER MODEL "WB" TWO STAGE



Built-in Motor; Air-Cooled

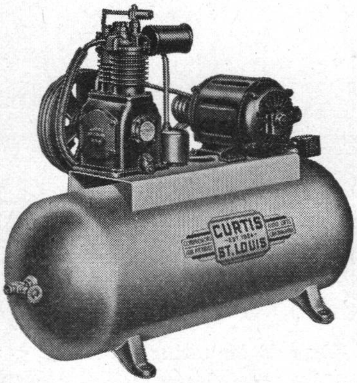
The built-in motor drive is a compact and efficient unit, suitable for a wide variety of applications and installations. When it is desired to use available standard motors, the WB compressor can be direct-connected through a flexible coupling or driven by a V-belt drive.

Piston displacement, cu. ft. a minute	No. of cylinders		Bore, in.	Stroke, in.	Compresser sheaves data Inches		"V" belts		Compressor only, over all, in.			Wt. comp. on skids lbs.
					Diam.	Width	No.	Section	L	W	H	
142	3	2LP 1HP	6 4¾	5	19½	5½	4	C	38	50	38	2135
194	3	2LP 1HP	7 5¾	5	21½	6¾	6	C	40	54	41	2370
285	6	4LP 2HP	6 4¾	5	21½	6¾	4	D	49	50	38	2710
387	6	4LP 2HP	7 5¾	5	21½	7⅞	5	D	54	56	42	3390
445	6	4LP 2HP	7½ 5¾	5	21½	9⅜	6	D	54	56	42	3445

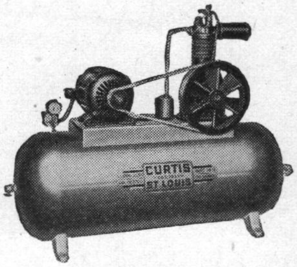
Prices on Request

AIR COMPRESSORS

CURTIS STYLE "V", SINGLE AND TWO STAGE



Two Stage



Single Stage

Horizontal Tank Mounted; Automatic Start and Stop Control

Two stage air compressors are recommended in most cases because of lower discharge air temperatures, greater efficiency, higher pressure available (175 lbs.) and longer life. When service is not heavy, and when a maximum pressure of 150 lbs. is sufficient, a single stage air compressor will serve.

It is suggested that careful consideration be given to the selection of the type of air compressor desired, since should there be a possibility of increasing your air requirements through the addition of other air-operated equipment, it will be well to select a two-stage compressor in preference to a single stage unit.

Main Features of All Units

1—Timken tapered roller main bearings reduce friction, insure longer life and provide easy adjustment.
2—Long life, minimum maintenance.
3—Self-oiling, controlled lubrication.
4—Centrifugal Unloader assures positive unloaded start.
5—Curtis made tank; improved appearance.
6—Precision built—nearly a century of successful engineering experience.

Two Stage Models

Maximum working pressure 200 lbs.; standard cut out pressure 175 lbs.; starts at 140 lbs. Air cooled.

									Air tank		
Nos.	**AC 60 Cy., SP, 110 volt, each**	**AC 60 Cy., SP, 120 volt, each**	**AC 60 Cy., 2 or 3 ph., 220 volt, each**	**AC 60 Cy., 2 or 3 ph., 440 volt, each**	Bore and stroke, in.	Compressor speed, RPM	Displacement, cu. ft.	Motor, HP	Approx. size, in.	Nom. cap., gals.	Ship. wt. ea., lbs.
V-885-A	**$519.00**	**$ 519.00**	**$ 496.50**	**$ 496.50**	3 —1⅞x3	400	4.9	1	20x50	60	515
V-906	**544.50**	**544.50**	**519.00**	**519.00**	3⅜—1⅞x3	460	7.13	1½	20x50	60	525
V-906-A	**577.50**	**577.50**	**552.00**	**552.00**	3⅜—1⅞x3	460	7.13	1½	20x66	80	600
V-907	**627.00**	**627.00**	**577.50**	**577.50**	3⅜—1⅞x3	600	9.3	2	20x50	60	590
V-907-A	**660.00**	**660.00**	**610.50**	**610.50**	3⅜—1⅞x3	600	9.3	2	20x66	80	665
V-958-A	**On req.**	**792.00**	**709.50**	**709.50**	$4\frac{3}{16}$—2⅛x3½	550	15.33	3	20x66	80	830
V-959-A	**On req.**	**1072.50**	**825.00**	**825.00**	$4\frac{3}{16}$—2⅛x3½	760	21.17	5	20x66	80	880
V-959-B	**On req.**	**1105.00**	**907.50**	**907.50**	$4\frac{3}{16}$—2⅛x3½	760	21.17	5	24x70	120	1100
V-9710	**On req.**	**On req.**	**1485.00**	**1443.00**	6¼—3⅜x3¾	550	37.0	7½	20x66	80	1350
V-9710-A	**On req.**	**On req.**	**1567.50**	**1525.50**	6¼—3⅜x3¾	550	37.0	7½	24x70	120	1500
V-9711	**On req.**	**On req.**	**1650.00**	**1650.00**	6¼—3⅜x3¾	650	43.3	10	20x66	80	1460
V-9711-A	**On req.**	**On req.**	**1732.50**	**1732.50**	6¼—3⅜x3¾	650	43.3	10	24x70	120	1610

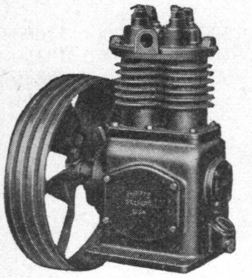
Single Stage Models

Maximum working pressure 150 lbs.; standard cut out pressure 150 lbs.; starts at 115 lbs. Air cooled.

V-101	**$247.50**	**$247.50**	**$259.50**	**$......**	2 x1¾	425	1.35	¼	16x29	20	220
V-153	**288.00**	**288.00**	**288.00**	**288.00**	2⅛x2⅝	500	2.70	½	16x41	30	320
V-304	**363.00**	**363.00**	**354.00**	**354.00**	2⅝x2⅝	500	4.08	¾	16x41	30	330
V-305-A	**462.00**	**462.00**	**445.00**	**445.50**	2⅝x2⅝	610	5.00	1	20x50	60	480
V-506	**511.50**	**511.50**	**486.00**	**486.00**	3⅜x3½	400	7.25	1½	20x50	60	520
V-507	**610.50**	**610.50**	**561.00**	**561.00**	3⅜x3½	500	9.06	2	20x50	60	545

Note—Also available with vertical tank.

CURTIS DUPLEX, SINGLE STAGE



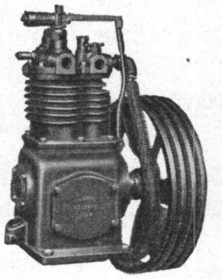
With Tight Pulley

Tapered roller main bearings; precision workmanship throughout; heat treated alloy steel valves; drop forged crankshaft.

Precision bored and honed cylinder; ground flush on piston rings, pins and crankshaft. "H" section connecting rod with renewable, non-cutting, two-piece, die cast, white metal bearing insert and metallic shims for take-up.

Nos.	**80**	**85**
Bore and stroke, in.	3⅜–3⅜x3½	3⅜–3⅜x3½
Cooling	Air	Water
Motor size, HP	3—5	3—5
Min. speed, RPM	400	400
Displacement, cu. ft.	14.5	14.5
Max. speed, RPM	800	800
Displacement, cu. ft.	29.0	29.0
Pulley, in.	16½x3¾	16½x3¾
Ship. wt. each, lbs.	210	210
With Tight Pulley ... Each	**$231.00**	**280.50**
Air Pressure Unloader ... Each	**49.88**	**49.88**
Centrifugal Unloader (not incl. pressure switch) ... Each	**30.00**	**30.00**
Suction Strainer and Muffler, extra ... Each	**5.25**	**5.25**
Sub-base, extra ... Each	**9.38**	**9.38**

CURTIS, TWO STAGE



With Tight Pulley; Air Cooled

Will produce more air with the same power than a single stage compressor.

The long, integral fins of the inter-cooler provide most effective cooling and two-stage efficiency.

Relief valve on low pressure side prevents building up high pressures in low pressure side and intercooler; no overloading.

Tapered roller main bearings.

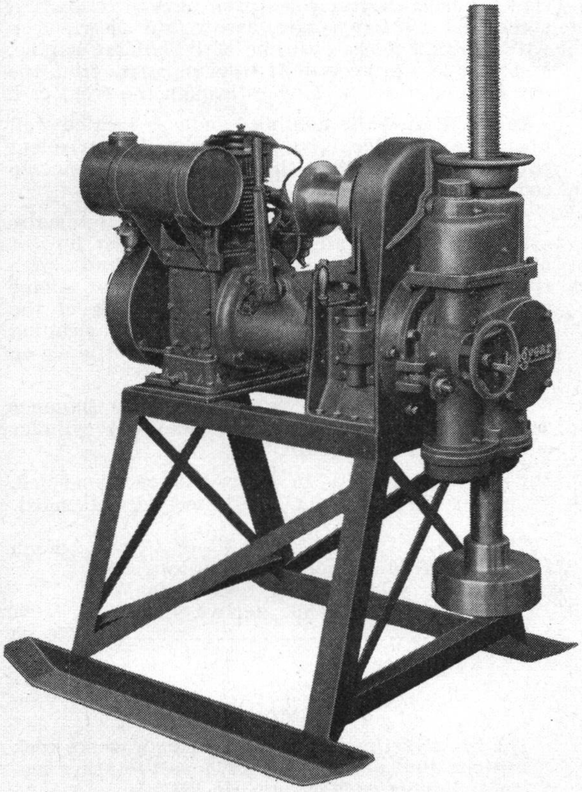
Nos.	**88**	**90**	**95**	**97**
Bore, in.	3–1⅞	3⅜–1⅞	$4\frac{3}{16}$–2⅛	6¼–3⅜
Stroke, in.	3	3	3½	3¾
Motor size, HP	¾–1	1½–2	3–5	7½–10
Min. speed, RPM	300	400	400	350
Displacement, cu. ft.	3.67	6.20	11.15	23.3
Max. speed, RPM	800	800	800	800
Displacement, cu. ft.	9.8	12.4	22.3	53.25
Pulley, in.	14x2½	14x2½	16½x3¾	18x5¼
Ship. wt. each, lbs.	150	150	210	510
With Tight Pulley ... Each	**$189.00**	**207.00**	**264.00**	**663.00**
Air Pressure Unloader. Each	**33.75**	**33.75**	**54.75**	**72.00**
Centrifugal Unloader (not incl. pressure switch) Each	**20.63**	**20.63**	**20.63**	**36.00**
Suction Strainer and Muffler ... Each	**4.13**	**4.13**	**5.25**	**7.13**
Sub-base, extra ... Each	**6.38**	**6.38**	**9.38**	**15.75**

All above, one in a crate.

LIGHT CORE DRILLS

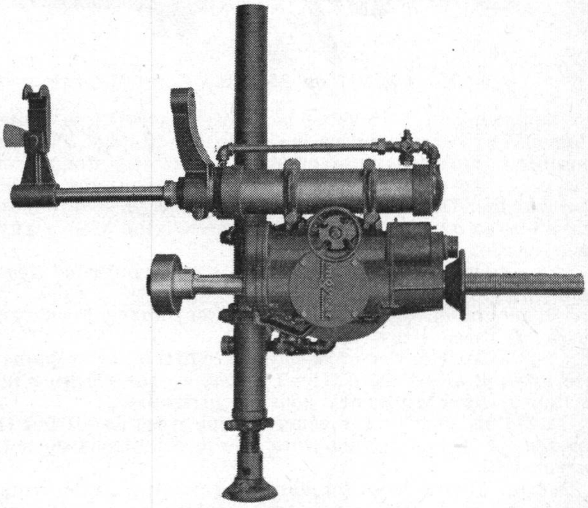
LONGYEAR PROSPECTORS

Powered by Air, Gasoline or Electricity



Gasoline Driven

Over a period of years Longyear Prospectors have met the demands of the mining industry for light core drills with capacities up to three hundred feet of ⅞-inch core. Within this capacity range, their practical value has been fully demonstrated by an increasing number of users. Improvements have been added from time to time so that the present Prospectors are offered unhesitatingly as the best drills for the purposes for which they are designed.



Air Driven

Prospectors are built for steady performance. Carefully machined working parts reduce vibration to a minimum. This results in a smoothly rotating bit, thereby improving drilling progress, decreasing diamond wear, and lowering costs. The drills are compact, easily moved, and quickly set up for drilling. There are three models—air, gasoline, or electrically driven drills—from which selection may be made for your surface or underground drilling requirements.

Air Driven Drill

The Prospector air model combines features which meet the basic requirements in a core drill designed for underground exploration work. Light weight assures easy moving, and small size permits setting up in limited working areas.

Gasoline Driven Drill

Covering a different field from that served by the air driven model, the Prospector, equipped with an air-cooled, 5½ HP gasoline motor, and mounted on a welded steel frame, is designed for core drilling from surface.

Electric Driven Drill

Mounted on a structural steel frame for surface drilling; mounted on a double column for underground work. Powered by a 5 HP electric motor, having an approximate speed of 1750 RPM.

Type of Power			**Air**	**Gasoline**	**Electric**
Model	Hole diam., in.	Core diam., in.	Capacity, ft.		
EX	1½	⅞	300	300	300
AX	1⅞	1⅛	200	200	200
BX	2⅜	1⅝	...	150	150
NX	3	2⅛	...	100	100
Weight, lbs.					
Motor			130	130	130
Clutch			None	35	35
Transmission and hoist			None	185	185
Screw feed swivel head (E)			150	150	150
Frame mounting			None	100	100
Column mounting			150	None	150
Total			280	600	600
Motor—HP			3½	5½	5
Approx. speed, RPM			950	1800	1750

Complete Specifications and Prices on Request

DIAMOND CORE DRILLS

LONGYEAR

For Contract Core Drilling, Shaft Sinking, Mine Development, Geological Investigations

Air Driven, Gasoline Driven, Diesel Driven, Electric Driven

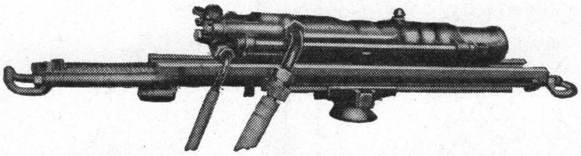
	Capacity, ft.	Diameter, in.*		Type of Feed S=Screw H=Hydraulic	Lgth. of feed, in.	Motive Unit A=Air E=Electric G=Gas D=Diesel	Approximate wt., lbs.	Mounting: column or frame	Pump recommended
		Hole	Core						
Column Mounted Models							Without Column		
Prospector Air	300	1½	⅞	S	18	A	260	Column	3x2x3
Prospector Hi-Speed	500	1½	⅞	S	18	A or E	A. 260 E. 375	Column	3x2x3
Junior Eleven	800	1½	⅞	S	14	A	395	Column	4x3x4
Wolverine	800	1½	⅞	S or H	S. 18 H. 18	A or E	A. 305 E. 395	Col. or Frame	4x3x4
Frame Mounted Models							With Frame		
Prospector	300	1½	⅞	S	18	G or E	G. 600	Frame	2¼x4
Pioneer Straitline	600	1½	⅞	S or H	S. 18 H. 18	G, E, A	G. 970	Frame	2½x4
Junior Straitline	1000	1½	⅞	S or H	S. 14 H. 12-24	G, D, E, A	G. 1500	Frame	3 x4
UG Straitline	2000	1½	⅞	S or H	S. 14 H. 12-30	G, D, E, A	G. 2200	Frame	3 x4
Master Straitline	4250	1⅞	1⅛	H	H. 18-30	G, D, E, A	G. 5100	Frame	3 x6

***Larger holes can be drilled, but with some reduction in capacity.**

Complete Information and Prices on Request

DRIFTING DRILLS

GARDNER-DENVER AUTOMATIC FEED



No. CF89H on Movable Cone Mounting

Beginning in 1936 there have been more large tunnel projects than in any corresponding period in our history. This same period has seen the almost universal adoption of automatic feed drills for this type of work and it is an overwhelming endorsement of the Gardner-Denver "Built-in Feed" that these automatic drifters have played an important part in the driving of so many mine and construction tunnels.

No other automatic drifter has the "built-in" feed with its many advantages.

Gardner-Denver automatic or "Continuous Feed" Drifters are made in three sizes.

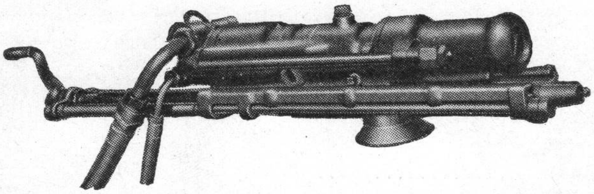
A 3 in. Drifter for cross-cutting, drifting, or stopping in moderate ground, or where difficult access to the working place makes a light weight automatic drifter advisable.

A 3½ in. Drifter for general mine work in all but the hardest ground, or in any tunnel work where conditions do not require a larger drill.

A 4 in. Tunnel Drill for hard rock mining, or for Jumbo Mounting in heavy tunnel construction where the ability to drill out the round in the shortest possible time is paramount.

Nos.	**CF79**	**CF89H**	**CF99**
Cylinder bore, in.	3	3½	4
Size chuck available	⅞ in. hex. or Q.O. to 1¼ in. round		1¼ or 1½ in. rod
Air hose, in.	¾ or 1	1	1
Water hose, in.	½	½	½
Wt. each, lbs.	108	131	176
Each	$835.00	905.00	1020.00

GARDNER-DENVER CRANK FEED



For medium ground where high drilling speed and light weight are essential. Chuck construction is available for lug shanks, plain shanks and collared shanks. Movable cone mounting.

Each

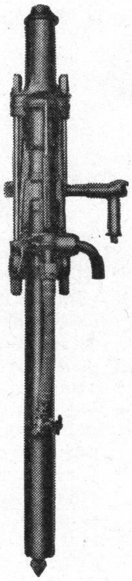
No. D-79—3 in. cylinder bore, ⅞ in. hex. or Q. O. to 1¼ in. round chucks, ¾ or 1 in. air hose and ½ in. water hose recommended; wt. each 87 lbs. $670.00

Prices on Request

One in a box.

STOPERS

GARDNER-DENVER SELF-ROTATING, DIRECT FEED



Long experience with this type of drill indicates that the most desirable features, next to reliability, speed and rotative power, are weight distribution with relation to the position of the holding handle, and complete protection of working parts from the entrance of water or sludge through the front end.

In No. RB104 the holding handle is located well upon the cylinder, giving the machine excellent balance and enabling the operator to maintain footing at all times.

The RB104 is protected by a fully automatic system of cleaning air. There is a constant flow of air into the drill and out through the chuck, with sufficient volume to prevent the water or sludge from running down the inside or outside of the hollow drill steel and into the drill. This cleaning air continues to flow whether the throttle is on or off.

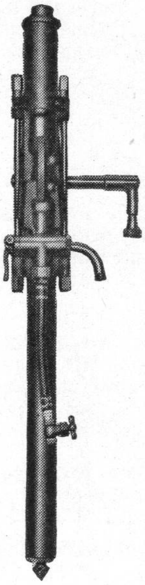
Because of the nice balance between hammer action and feed pressure, one size feed cylinder suffices for any pressure.

1 in. air hose and ½ in. water hose recommended. ⅞ in. hex. to 1⅛ in. Q.O. drill steel recommended.

Each

No. RB104—2¾ in. diam. feed cylinder, 59¼ in. long over all feed piston closed, 85⅛ in. long feed piston extended, 18 in. max. change of steel; net wt. 126 lbs.; shipping wt. 165 lbs. $670.00

One in a box.



The No. RB94 meets all requirements where rock conditions indicate the use of a self-rotating machine of lighter weight than No. RB104.

Perfect balance and low maintenance are assured by correct design which includes proper relation between drilling speed and power of feed at all times. Correct position of holding handle and accurate weight distribution. This stoper will not "nose dive."

The same fully automatic system of cleaning air used successfully in No. RB104 completely protects the front end from entrance of water and sludge.

1 in. air hose and ½ in. water hose recommended. ⅞ or 1 in. drill steel recommended.

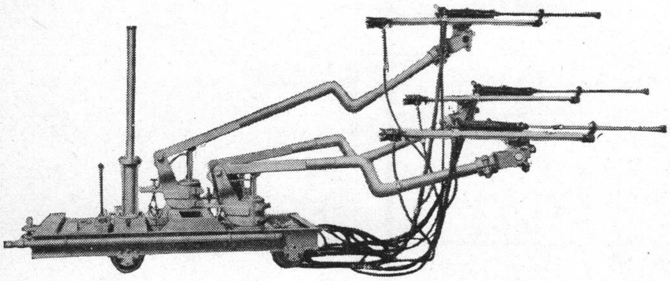
Each

No. RB94—2 9/16 in. diam. feed cylinder, 58 in. long over all feed piston closed, 83⅝ in. long feed piston extended, 18 in. max. change of steel; net wt. 100 lbs.; shipping wt. 134 lbs. $610.00

One in a box.

HYDRAULIC DRILL JUMBOS

GARDNER-DENVER



For Supporting Drifting Drills in High Speed Mine Drifts and Tunnels

The 1 and 2 boom units are suitable for use in headings up to 10 ft. high and 12 ft. wide, and the 3 boom unit in headings up to 11½ ft. high and 18 ft. wide.

No lifting of drills—booms raised by hydraulic cylinders operated by levers. Power used to raise boom is about ⅓ that needed in competitive jumbos.

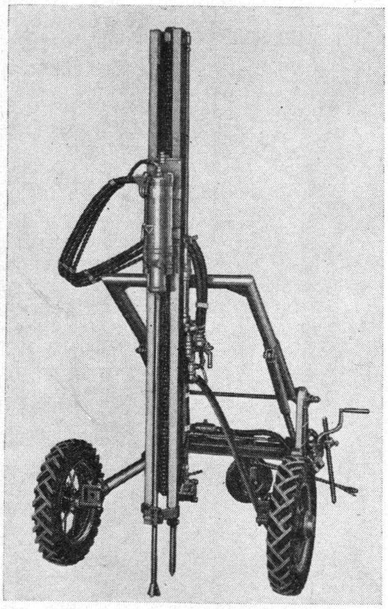
Variations in height of roof taken care of by the hydraulic ram or jack, which anchors rig firmly in place.

Booms available in different lengths to suit heading sizes, and booms may be purchased separately for assembly on mine truck or other carriage.

Prices and Specifications on Request

WAGON DRILLS

LE ROI CLEVELAND UNIVERSAL



Unusual Flexibility, Rotation Power, and Speed—to Cut Deep Hole Drilling Costs

The Model DR-30 is extremely flexible—holes can be drilled at practically any angle. The DR-30 can even be used in a 5 ft. trench.

It has a feed travel of 8 ft. 1 in. that permits changing 6 ft. steels and makes allowance for irregular lengths.

Because of its drilling speed and the strong rotation of its powerful 4 in. bore drifter, this rig is ideally suited for drilling holes up to 40 ft. in depth.

The built-in twin jackscrew mechanism through which the U-bar is raised or lowered to desired position, insures ease and smoothness of action, and shortens the set-up time when a variety of holes must be drilled.

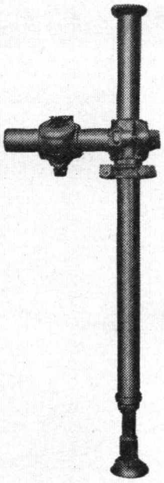
Each

No. DR-30—Nominal steel change 6 ft., actual feed travel 97 in., nominal road gauge 56½ in., road gauge with wheels swiveled inside 40½ in., length 8 ft., width over all 5 ft. 10 in., height when drilling down holes 10½ ft.; net wt. each 1500 lbs.; shipping wt. 1750 lbs.; price without drifter $1650.00

One in a crate.

SCREW COLUMNS

GARDNER-DENVER



Screw Column

Single Screw

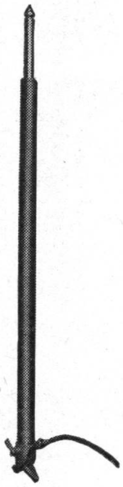
Size, in.	3	3½	4	4½
Bare, With Safety Clamp				
Wt. lbs.	86	101	152	182
Ea.	$82.00	95.00	109.00	124.00
With Standard Arm Clamp, Saddle, and Safety Clamp				
Wt., lbs.	150	186	283	320
Ea.	$136.00	164.00	187.00	210.00
With Universal Arm Clamp, Saddle, and Safety Clamp				
Wt., lbs.	173	222	299	344
Ea.	$142.00	171.00	195.00	220.00

Note—Above prices cover columns up to and including 8 feet in length.

Each Additional Foot

Size, in.	3	3½	4	4½
Wt., lbs.	8.5	11.6	13.45	16.5
Per foot	$1.80	2.40	3.00	3.60

Open stock.



Pneumatic Column

PNEUMATIC COLUMNS

GARDNER-DENVER

Bare

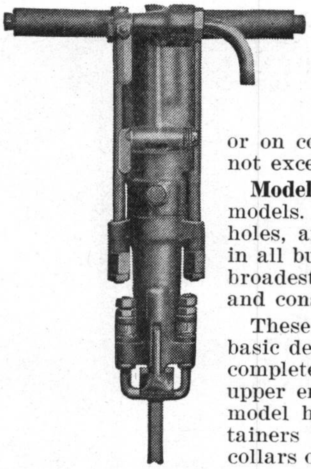
6 ft. long.

Size, in.	3	3½
Wt. each, lbs.	86	106
Each column only	$167.00	204.00
Each Additional Foot		
Wt., lbs.	9	11
Per foot	$4.05	5.55

Open stock.

HAND-HELD AIR DRILLS

GARDNER-DENVER



The most widely used sizes of the hand-held type of drill.

Model S45 is recommended for use in soft and medium formation in mines, or in limestone quarries, or on construction work where the holes do not exceed 10 or 12 ft. in depth.

Model S55D is the most popular of the two models. Its ability to drill and clean deep holes, and to complete a high daily footage in all but the hardest formations gives it the broadest field of use in mining, quarrying and construction.

These models are closely related in their basic design. In each one, the valve action is completely enclosed in a counterbore at the upper end of the drop-forged cylinder. Each model has four-pawl rotation. The steel retainers make positive engagement with the collars of the steel, but are easy to disengage.

No detail has been overlooked in making every model efficient, easy to handle, and low in maintenance. A small, but important example of this attention to detail, is the exhaust control valve which is forged in one piece with its handle.

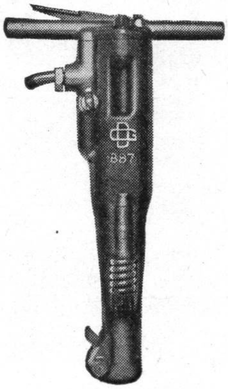
All may be fitted as wet models for underground use, or for conditions requiring wet drilling.

Models	**S45**	**S55D**
Length over all, in.	21¼	23⅜
Cylinder bore, in.	2⅝	2⅝
Size steel recommended, in.	⅞ to 1 in.	hex or Q.O.
Size air hose recommended, in.	¾	¾–1
Size water hose recommended, in.	½	½
Net wt. each, lbs.	45	56½
Ship. wt. each, lbs.	56	72
Each	$315.00	330.00

One in a box.

CONCRETE BREAKERS

GARDNER-DENVER, AIR DRIVEN



Simple construction with a minimum of moving parts, freedom from freezing in cold weather, and low maintenance characterize the line.

Model B67

Well-balanced breakers of medium weight for concrete, general demolition, or asphalt cutting.

1⅛ or 1¼ in. hex chuck; ¾ in. air hose recommended.

Each

Model B67—Net wt. each 63 lbs. ..$290.00

Model B87

This is a heavy breaker for street work or demolition of mass concrete such as machinery foundations. The heavy block-type piston hammer, long stroke, and non-freezing characteristics make it popular for street, railway and public utility use.

1⅛ or 1¼ in. hex chuck; ¾ in. air hose recommended.

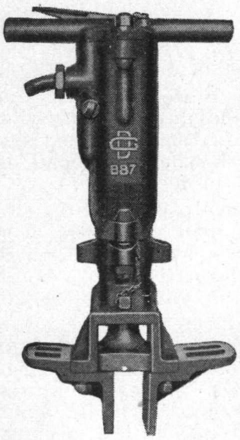
Each

Model B87—Net wt. each 81 lbs. $320.00

One in a box.

SHEETING DRIVERS

GARDNER-DENVER, AIR DRIVEN



A conversion of the Model B87 breaker for sheet pile driving. Has adjustable jaws and driving block for sheeting or sheet piling.

Equal to any 250 lb. steam sheet pile hammer and will not broom the piling.

Jaws adjustable up to 3 in. sheeting and may be positioned parallel with or at 90° to the holding handle.

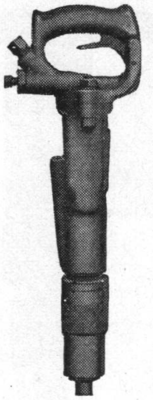
¾ in. air hose recommended.

	Each
Model B87S—Net wt. each 106 lbs.	$440.00

One in a box.

CLAY SPADERS

GARDNER-DENVER, AIR DRIVEN



With Short Pistol Grip Handle

Made for all around tunnel or caisson work in stiff clay, or for light demolition work with a moil or chisel point.

Has but one moving part, the hammer, and is entirely free from the usual difficulties caused by dirt in the air or freezing in cold weather.

Can be fitted with chucks to take 3 sizes of shanks, ¾ in. square x 2¾ in., ⅞ in. hex x 2¾ in., or ⅞ in. hex x 3¼ in.

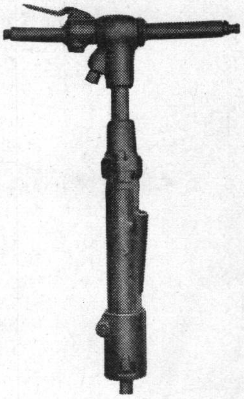
	Each
Model 28—Screwed type chuck ..	$165.00
Model 28A—Bolted-on type chuck	165.00

Net weight each 20 pounds.

One in a box.

TRENCH DIGGERS

GARDNER-DENVER, AIR DRIVEN



With Tee Handle

The same as Model 28 except for the handle.

As the name implies it is convenient for trench digging, also stripping rock or for foundation work to replace hand picks where the shovel cannot be used.

	Each
Model 128—Screwed type chuck.	$165.00
Model 128A—Bolted-on type chuck	165.00

Net weight each 25 pounds.

ROCK BITS

TIMKEN

Selected Timken Alloy Steel

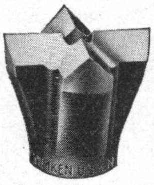
"H" Series—1 in. Thread

A standard 4-point, general purpose type, adaptable to construction, mining and quarrying where light and medium weight rock drills are employed. They are widely used with hand-held sinker drills.

Adaptable to any standard size of hollow drill steel.

Center Airhole Nos.	Center Airhole Net each	Side Airhole Nos.	Side Airhole Net each	Bit gauge, in.	Wt. box of 50, lbs.
H-1⅜	$0.429	**SH-1⅜**	$0.439	1⅜	19
H-1½	.451	**SH-1½**	.461	1½	21
H-1⅝	.462	**SH-1⅝**	.472	1⅝	24
H-1¾	.473	**SH-1¾**	.483	1¾	28
H-1⅞	.484	**SH-1⅞**	.494	1⅞	29
H-2	.490	**SH-2**	.500	2	32
H-2⅛	.501	**SH-2⅛**	.511	2⅛	34
H-2¼	.517	**SH-2¼**	.527	2¼	35
H-2⅜	.539	**SH-2¾**	.549	2⅜	43
H-2½	.561	**SH-2½**	.571	2½	56
H-2⅝	.594	**SH-2⅝**	.604	2⅝	57

Fifty in a box.



"M" Series—1 in. Thread

A 4-point intermediate type for use where a more substantial bit than type "H" is desired but where the heavy duty type "D" is not required. Can be employed with drifter, stopers, sinkers, or light wagon drills in drilling of extremely hard formations.

Interchangeable with Style "H".

Center Airhole Nos.	Center Airhole Net each	Side Airhole Nos.	Side Airhole Net each	Bit gauge, in.	Wt. box of 50, lbs.
M-1¾	$0.483	**SM-1¾**	$0.493	1¾	34
M-1⅞	.494	**SM-1⅞**	.504	1⅞	38
M-2	.500	**SM-2**	.510	2	41
M-2⅛	.511	**SM-2⅛**	.521	2⅛	44
M-2¼	.527	**SM-2¼**	.537	2¼	52
M-2⅜	.549	**SM-2⅜**	.559	2⅜	55
M-2½	.561	**SM-2½**	.581	2½	65
M-2⅝	.604	**SM-2⅝**	.614	2⅝	68

Fifty in a box.

"D" Series—1$\frac{3}{16}$ in. Thread

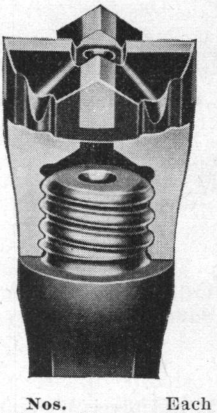
A 4-point, heavy-duty bit for use with heavy drifters, wagon and tripod drills in mining, quarrying and construction.

Center Airhole Nos.	Center Airhole Net each	Side Airhole Nos.	Side Airhole Net each	Bit gauge, in.	Wt. box, lbs.
D-1¾	$0.484	**SD-1¾**	$0.494	1¾	40
D-1⅞	.495	**SD-1⅞**	.505	1⅞	45
D-2	.506	**SD-2**	.516	2	46
D-2⅛	.539	**SD-2⅛**	.549	2⅛	49
D-2¼	.561	**SD-2¼**	.571	2¼	52
D-2⅜	.594	**SD-2⅜**	.604	2⅜	56
D-2½	.616	**SD-2½**	.626	2½	59
D-2⅝	$0.649	**SD-2⅝**	$0.659	2⅝	65
D-2¾	.682	**SD-2¾**	.692	2¾	66
D-2⅞	.715	**SD-2⅞**	.725	2⅞	73
D-3	.759	**SD-3**	.769	3	76
D-3⅛	.858	**SD-3⅛**	....	3⅛	52
D-3¼	.880	**SD-3¼**	....	3¼	52

1¾ to 3 in., fifty; 3⅛ and 3¼ in., twenty-five in a box.

Note—Above prices are net for purchases of less than 200 bits; quantity discounts are extended for purchases of more than 200 at one time.

Note—See next page for Drill Steel Rods for all above bits.



Carbide Insert, 4-Point

The Timken Carbide Insert Rock Bit has been developed primarily for unusual rock conditions where its super hardness, drilling speed and endurance assure utmost economy.

All series are made in the "center-side-hole" type—center airhole as well as two side airholes.

"MC" Series—1 in. Thread

Interchangeable with "M" or "H" series.

Nos.	Each	Bit gauge, in.	Wt. box of 12, lbs.
MC-1½-CS	$12.60	1½	9
MC-1⅝-CS	13.65	1⅝	10
MC-1¾-CS	14.20	1¾	11
MC-1⅞-CS	14.70	1⅞	12
MC-2 -CS	15.75	2	13

"MCA" Series—1 in. Thread

Has a fast breakaway wing for better clearance in drilling formations where extraction is difficult. Interchangeable with "M" or "H" series.

Nos.	Each	Bit gauge, in.	Wt. box of 12, lbs.
MCA-1½-CS	$12.60	1½	8
MCA-1⅝-CS	13.65	1⅝	8
MCA-1¾-CS	14.20	1¾	9
MCA-1⅞-CS	14.70	1⅞	10
MCA-2 -CS	15.75	2	10
MCA-2¼-CS	21.00	2¼	15

"DC" Series—1$\frac{3}{16}$ in. Thread

Interchangeable with "DD" series.

Nos.	Each	Bit gauge, in.	Wt. box of 12, lbs.
DC-2 -CS	$15.75	2	14
DC-2¼-CS	21.00	2¼	20
DC-2⅜-CS	23.10	2⅜	23
DC-2½-CS	25.20	2½	24
DC-3 -CS	29.40	3	33

"FC" Series—⅞ in. Thread

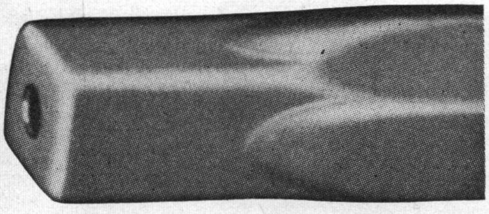
Nos.	Each	Bit gauge, in.	Wt. box of 12, lbs.
FC-1⅜-CS	$12.10	1⅜	7
FC-1½-CS	12.60	1½	9
FC-1⅝-CS	13.65	1⅝	9

Twelve in box.

DRILL STEEL RODS

TIMKEN

For Timken Rock Bits

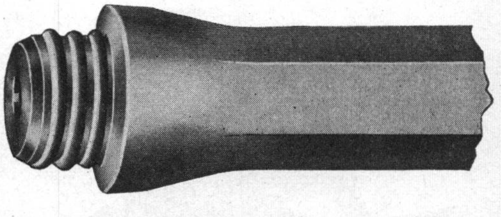


For One-Use "Spiralock" Bits

Made of hollow center drill steel. Accurately gauged thickness; correct lengths; full size unobstructed center holes.

Sizes and Lengths Available

Net Prices Each to Users



Hexagon, Shanked and Threaded

Drilling length, ft.	Size of steel, in.											
	⅞" Hexagon			⅞" Q.O.	1" Hexagon		1" Q.O.	1" Round		1⅛" Round		1¼" Rd.
	Size of Shank											
	*⅞"x 3¼" square	⅞" hex 3¼" collar	⅞" hex Stoper plain	⅞" Q.O. Stoper plain	1" hex 4¼" collar	1" hex Stoper plain	1" Q.O. Stoper plain	⅞" hex 3¼" collar	1" rd. lugged	1" hex 4¼" collar	1⅛" rd. lugged	1¼" rd. lugged
1	$ 3.05	$ 3.05	$ 2.90	$ 3.20	$ 3.45	$ 3.30	$ 3.80	$ 3.70	$ 3.70	$ 3.80	$ 3.80	$ 4.25
1½	3.35	3.35	3.20	3.50	3.80	3.65	4.15	4.05	4.05	4.30	4.30	4.80
2	3.65	3.65	3.50	3.80	4.15	4.00	4.50	4.40	4.40	4.80	4.80	5.35
2½	3.95	3.95	3.80	4.10	4.50	4.35	4.85	4.75	4.75	5.30	5.30	5.90
3	4.25	4.25	4.10	4.40	4.85	4.70	5.20	5.10	5.10	5.80	5.80	6.45
3½	4.55	4.55	4.40	4.70	5.20	5.05	5.55	5.45	5.45	6.30	6.30	7.00
4	4.85	4.85	4.70	5.00	5.55	5.40	5.90	5.80	5.80	6.80	6.80	7.55
4½	5.15	5.15	5.00	5.30	5.90	5.75	6.25	6.15	6.15	7.30	7.30	8.10
5	5.45	5.45	5.30	5.60	6.25	6.10	6.60	6.50	6.50	7.80	7.80	8.65
5½	5.75	5.75	5.60	5.90	6.60	6.45	6.95	6.85	6.85	8.30	8.30	9.20
6	6.05	6.05	5.90	6.20	6.95	6.80	7.30	7.20	7.20	8.80	8.80	9.75
6½	6.35	6.35	6.20	6.80	7.35	7.20	8.30	7.60	7.60	9.35	9.35	10.30
7	6.70	6.70	6.55	7.15	7.75	7.60	8.70	8.00	8.00	9.90	9.90	10.90
7½	7.05	7.05	6.90	7.30	8.15	8.00	9.10	8.40	8.40	10.45	10.45	11.50
8	7.40	7.40	7.25	7.85	8.55	8.40	9.50	8.80	8.80	11.00	11.00	12.10
8½	7.75	7.75	7.60	8.20	8.95	8.80	9.90	9.20	9.20	11.55	11.55	12.70
9	8.10	8.10	7.95	8.55	9.35	9.20	10.30	9.60	9.60	12.10	12.10	13.30
9½	8.45	8.45	8.30	8.90	9.75	9.60	10.70	10.00	10.00	12.65	12.65	13.90
10	8.80	8.80	8.65	9.25	10.15	10.00	11.10	10.40	10.40	13.20	13.20	14.50
10½	9.15	9.15	9.00	9.60	10.55	10.40	11.50	10.80	10.80	13.75	13.75	15.10
11	9.50	9.50	9.35	9.95	10.95	10.80	11.90	11.20	11.20	14.30	14.30	15.70
11½	9.85	9.85	9.70	10.30	11.35	11.20	12.30	11.60	11.60	14.85	14.85	16.30
12	10.20	10.20	10.05	11.05	11.75	11.60	12.70	12.00	12.00	15.40	15.40	16.90
12½	10.55	10.55	10.40	11.40	12.15	12.00	13.80	12.40	12.40	15.95	15.95	17.50
13	10.90	10.90	10.75	11.75	12.55	12.40	14.20	12.80	12.80	16.50	16.50	18.10
13½	11.25	11.25	11.10	12.10	12.95	12.80	14.60	13.20	13.20	17.05	17.05	18.70
14	11.60	11.60	11.45	12.45	13.35	13.20	15.00	13.60	13.60	17.60	17.60	19.30
14½	11.95	11.95	11.80	12.80	13.75	13.60	15.40	14.00	14.00	18.15	18.15	19.90
15	12.30	12.30	12.15	13.15	14.15	14.00	15.80	14.40	14.40	18.70	18.70	20.50
15½	12.65	12.65	12.50	13.50	14.55	14.40	16.20	14.80	14.80	19.25	19.25	21.10
16	13.00	13.00	12.85	13.85	14.95	14.80	16.60	15.20	15.20	19.80	19.80	21.70
16½	13.35	13.35	13.20	14.20	15.35	15.20	17.00	15.60	15.60	20.35	20.35	22.30
17	13.70	13.70	13.55	14.55	15.75	15.60	17.40	16.00	16.00	20.90	20.90	22.90
17½	14.05	14.05	13.90	14.90	16.15	16.00	17.80	16.40	16.40	21.45	21.45	23.50
18	14.40	14.40	14.25	15.25	16.55	16.40	18.20	16.80	16.80	22.00	22.00	24.10
18½	14.75	14.75	14.60	15.60	16.95	16.80	18.60	17.20	17.20	22.55	22.55	24.70
19	15.10	15.10	14.95	15.95	17.35	17.20	19.00	17.60	17.60	23.10	23.10	25.30
19½	15.45	15.45	15.30	16.30	17.75	17.60	19.40	18.00	18.00	23.65	23.65	25.90
20	15.80	15.80	15.65	16.65	18.15	18.00	19.80	18.40	18.40	24.20	24.20	26.50

*Square shank on hexagon steel for use with One-Use "Spiralock" (Throwaway) bits.

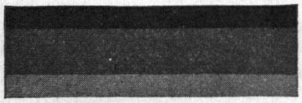
Note—Above prices are for TH thread (nominal 1 in.). Prices also apply to TD (1 3/16 in.) and TF (⅞ in.) thread.

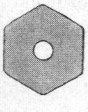
Long Drill Rods, 1¼ in. Round

Length, ft.	22	24	26	28	30	32	34	36	38	40
With 1 in. thread ....Net each	$27.50	30.80	33.10	35.40	37.75	46.75	49.65	52.60	55.60	58.50

Note—Weights of above can be computed from weight of Hollow Drill Steel below.

DRILL STEEL





CRUSCA

Natural Finish

Standard mill lengths 16 to 24 ft. Longer lengths, if required, can be supplied promptly.

Hollow

Size, in.	Per foot	Hole diam., in.	Wt. ft., lbs.
	Hexagon		
⅞	$....	17/64	2.05
1	....	17/64	2.55
	Round		
1	$....	17/64	2.05
1⅛	....	11/32	3.07
1¼	....	11/32	3.85
1½	....	½	5.18
	Quarter Octagon		
⅞	$....	17/64	2.30
1	....	17/64	2.90

Solid

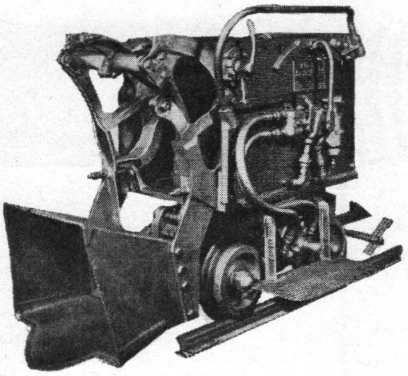
Size, in.	Per foot	Wt. ft., lbs.
	Hexagon	
¾	$....	1.68
⅞	....	2.29
1	....	2.99
1⅛	....	3.78
1¼	....	4.66
	Quarter Octagon	
⅞	$....	2.50
1	....	3.25

Size, in.	Per foot	Wt. ft., lbs.
	Octagon	
½	$....	.70
⅝	....	1.10
¾	....	1.58
⅞	....	2.16
1	....	2.82
1⅛	....	3.56
1¼	....	4.40
1½	....	6.34

Prices on Request

MINE CAR LOADERS

EIMCO ROCKERSHOVELS, AIR OPERATED

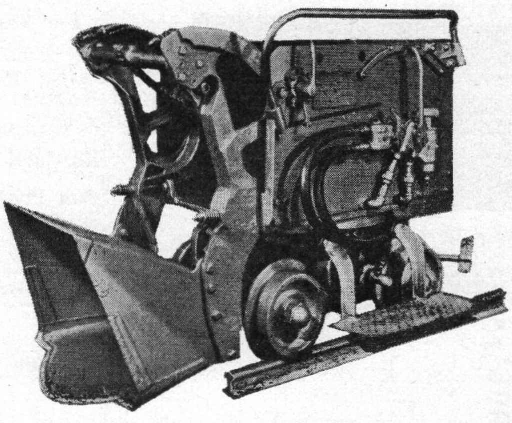


Model 12B

The Model 12B RockerShovel is the smallest of the RockerShovel line of loading equipment. It requires a minimum of space for caging (28x42 in.) and is easily moved from heading to heading, if desired.

Model 12B's are available for any track gauge between 15 and 36 in. and each is supplied with a special coupler designed to efficiently hold the user's car regardless of make of car. **Loading speed 1 ton per minute.**

Over all width, in.	28
Over all length (caging), in.	42
Over all length (bucket down), in.	71
Headroom required (Min. std.), in.	72
Cleanup range, without sideplow, in.	75
No. of air motors	2
Air consumption, CFM	70–100
Weight complete, lbs.	4200

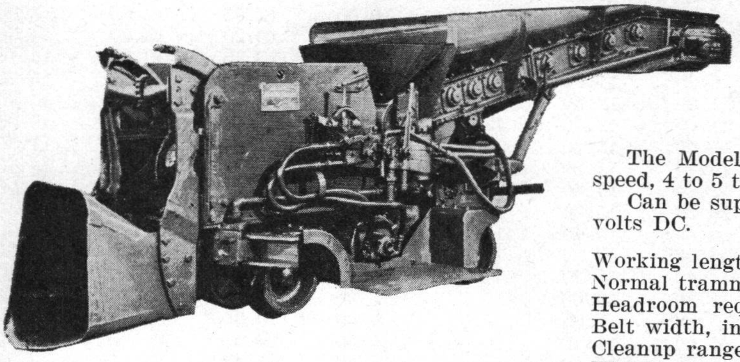


Model 21

Eimco's Model 21 RockerShovel with greater capacity than the Model 12B is designed to efficiently load out larger tunnels. The Model 21 includes all the features of the Model 12B. Both have numerous advantages over competitive models and many safety features found in no other mechanical loader.

The Model 21 is furnished with any track gauge between 18 and 48 inches. **Loading speed—2 tons per minute.**

Over all width, in.	33½
Over all length (caging), in.	54
Over all length (bucket down), in.	81
Headroom required (min. std.), in.	89
Cleanup range, without sideplow, in.	88
No. of air motors	2
Air consumption, CFM	100–150
Weight complete, lbs.	7400



Model 40

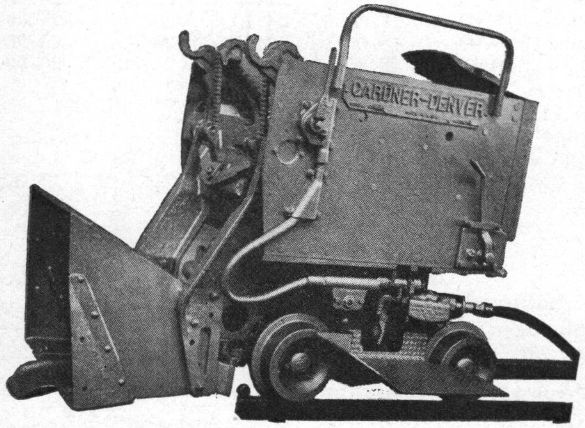
Designed to handle big headings and large cars, the Eimco Model 40 RockerShovel is a heavy duty machine for continuous service in contract tunnel or mine. Using the same rocker-arm principle as the smaller models, the Model 40 is built of heavy steel casting, and its rugged construction throughout insures trouble free operation.

The Model 40 is furnished for track gauges from 24 to 56½ in. Loading speed, 4 to 5 tons per minute. Bucket capacity ½ yard.

Can be supplied for use on 220, 380, 440 and 550 volts AC, or 230, 250, 500 volts DC.

Working length, bucket down	20′ 8½″
Normal tramming length, bucket up	17′ 10¾″
Headroom required	7′ 10″
Belt width, in.	28
Cleanup range, without sideplow, ft.	12
Weight complete, lbs.	15,800

Complete Information and Prices on Request



GARDNER-DENVER, AIR OPERATED

Model GD14 "Big Bite"

A sturdy, reliable machine for the fast and economical loading of broken ground from tunnels or the larger mine headings. The GD14 loads the larger and longer mine cars at the rate of two to three tons per minute. When operating on 80 to 100 lbs. air pressure, it will load such cars to capacity as fast as empties can be supplied.

The GD14 Loader is available in track gauges from 18 to 36 in. and the GD14H up to 42 in. They can be supplied with couplings to fit any mine car coupling. Rounded corners on the rear shield allow close coupling to the mine car.

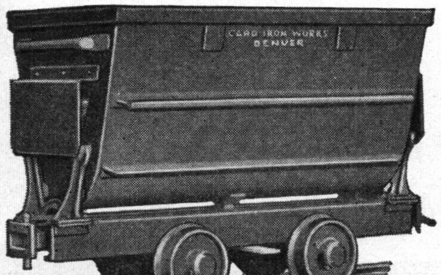
The GD14 is a precision built machine, with anti-friction ball, roller and tapered roller bearings used liberally throughout its construction. All gears, as well as numerous shafts and other parts are case hardened. Where close running fits are required, parts have been ground to a high finish, and minimum limits are maintained wherever necessary. Heat treated forgings are used throughout for extra strength and toughness.

Models	**GD14**	**GD14H**
Over all width, in.	38 5/16	38 5/16
Width, less controls, in.	35⅝	35⅝
Length over all, dipper lowered, in.	81¾	81¾
Length over all, dipper raised, in.	54⅜	54⅜
Height over all, dipper lowered, in.	59½	62½
Headroom required, in.	91	97
Digging width, in.	77½–94	77½–94
Clean-up width, with plow, in.	118	118

Models	**GD14**	**GD14H**
Loading capacity, tons per min.	2–3	2–3
Track gauge, in.	18–36	18–42
Air pressure required, lbs.	80–100	80–100
No. of air motors	2	2
Discharge height of dipper, in.	57	63
Discharge dist. behind loader, in.	15¾	15¾
Air hose recommended, in.	1¼	1¼
Net wt. complete, lbs.	6280	6850

Complete Information and Prices on Request

ORE CARS



CARD STANDARD ROCKER DUMP TYPE

These standard "RD" type cars are recommended for use where it is desired to carry from 20 to 40 cubic feet per car.

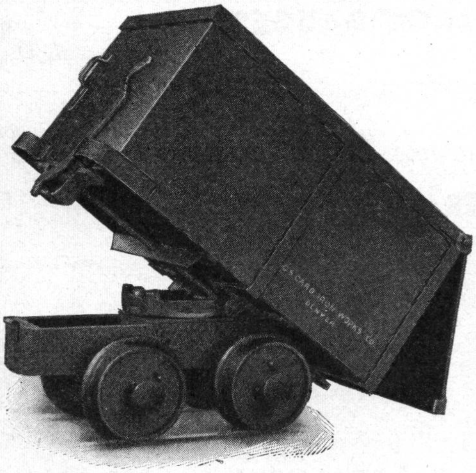
The standard designs offered are based on field results obtained from years of experience in furnishing the same general design of cars to widely scattered mining operations. The prime advantages of this type of car are (1) the solid construction of the body—there are no doors to become loose and cause spillage of fines, and body retains its original shape under severe usage, (2) the relatively few working parts, (3) the ease with which the cars can be dumped manually, and (4) the adaptability to loading by slusher, chute or mucking machine.

18 in. Track Gauge			24 in. Track Gauge			Capacity level full, cu. ft.	Lgth. over all, in.	Width over all, in.	Thick. of stud, in.		Truck			Top of rail to C/L of draw head, in.
Nos.	Ht. above rail, in.	Wt. each, lbs.	Nos.	Ht. above rail, in.	Wt. each, lbs.				Sides and bottom	Ends	Wheel diam., in.	Axle, in.	Wheel base, in.	
20-18	44⅞	1310	**20-24**	46⅜	1360	20	68	36⅜	3/16	¼	12	2	24	10⅝
24-18	45	1440	**24-24**	46½	1490	24	77	36⅜	3/16	¼	12	2¼	24	10¾
28-18	47¾	1530	**28-24**	49⅜	1580	28	77	37⅞	3/16	¼	12	2¼	24	10¾
32-18	48	1700	**32-24**	49⅝	1750	32	84½	38	¼	¼	12	2¼	28	10¾
36-18	52	1900	**36-24**	53¾	1950	36	84½	39¾	¼	¼	14	2½	28	12⅜
40-18	52	2000	**40-24**	53¾	2040	40	92	39¾	¼	¼	14	2½	34	12⅜

Prices on Request

ORE CARS

CARD STANDARD TYPE "Z"



A standard ore car that will meet practically all ordinary conditions where a car of this style is required.

The body is well braced and balanced on the truck frame. Two angles are used to reinforce the bottom. Cars of 20 cu. ft. capacity and larger are regularly furnished with one reinforcing bar in the center of the body.

Bumpers, which are used as handles when dumping, are located at the strongest part of the body. The door has a reinforcing strap at the bottom.

The turntable is semi-steel with a grease lubricated machined groove, which takes most of the load off the king pin in turning and is dirt-proof.

Type "Z" ore cars are usually equipped with Card-Timken bearing trucks. Card roller bearing trucks can be furnished.

Standard solid drawbars and chains for coupling these cars in trains can be furnished. Brakes can also be furnished.

Frame reinforcing bars can be furnished and are recommended when the cars are to be loaded with mechanical loaders.

	18 in. Track Gauge				24 in. Track Gauge			
	Over all dimensions, in.			Wt. complete, lbs.	Over all dimensions, in.			Wt. complete, lbs.
Nos.	Lgth.	Width	Height		Lgth.	Width	Height	
Z-12	46½	27½	36⅜	665	46½	27½	36⅜	700
Z-14	46½	27½	40⅜	690	46½	27½	40⅜	725
Z-16	48½	29½	40½	710	48½	29½	40½	745
Z-18	48½	33½	40½	730	48½	33½	40½	765
Z-20	52¾	34¼	42⅝	925	52¾	34¼	42⅝	960
Z-22	58⅞	34⅜	42⅝	1020	58⅞	34⅜	42⅝	1070
Z-24	58⅞	34⅜	44¾	1090	58⅞	34⅜	44¾	1150
Z-28	58⅞	34⅜	48¾	1155	58⅞	34⅜	49½	1210

Dimensions

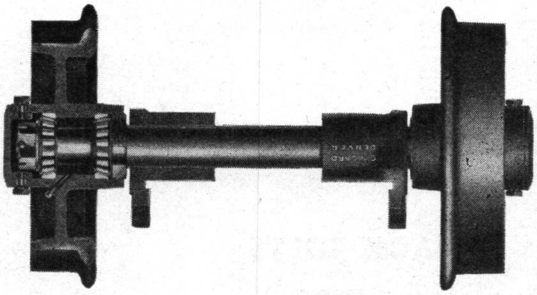
	Inside body, in.			Steel thickness		Wheel dia., in.	Axle size, in.	Wheel base, in.
Nos.	Lgth.	Width	Height	Bottom, in.	Sides and door, ga.			
Z-12	42	24	20½	3/16	10	10	1¾	16
Z-14	42	24	24½	3/16	10	10	1¾	16
Z-16	44	26	24½	3/16	10	10	1¾	16
Z-18	44	30	24½	3/16	10	10	1¾	16
Z-20	48	30	24½	¼	10	12	2	18
Z-22	54	30	24½	¼	3/16	12	2	18
Z-24	54	30	26½	¼	3/16	12	2¼	18
Z-28	54	30	30½	¼	3/16	12	2¼	18

Note—Cars can be furnished for track gauges other than shown.

Prices on Request

ORE CAR TRUCKS

CARD TIMKEN BEARING



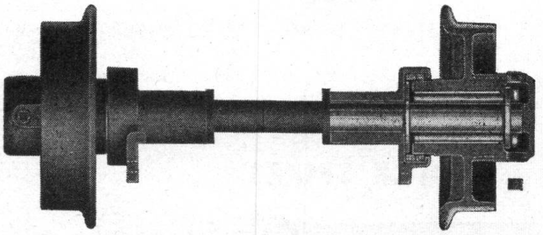
A very popular easy running truck, with Timken bearings mounted in the wheels, round high-carbon steel axles and "Card" semi-steel, heat-treated wheels.

The pedestals for attaching the truck to the car frame can be had in many types to meet almost any condition. Type "C" pedestals are illustrated.

These trucks are shipped grease packed, ready to operate.

Can be furnished with any size wheel or axle and to any track gauge.

Prices on Request

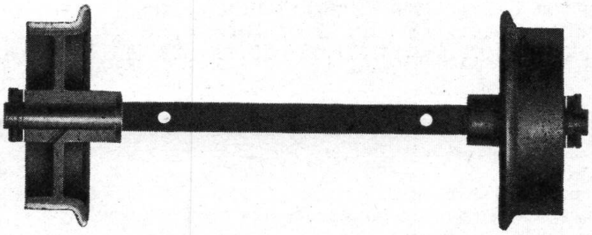


This truck combines the "Card" semi-steel heat-treated wheels with a special analysis steel roller bearing and high carbon steel axles. Pedestals for attaching the trucks to car frames can be had in many styles and to meet almost any condition. Type "C" pedestals are illustrated.

These trucks are shipped grease packed, ready to operate.

They can be furnished with any size wheel or axle and for any track gauge.

Prices on Request



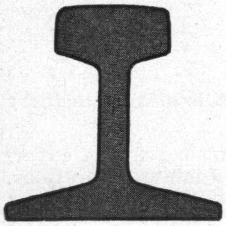
This truck is often used where inexpensive equipment for short and slow haulage conditions is desired.

Regularly equipped with "Card" semi-steel, heat-treated wheels and with high carbon steel axles. The liberal bearing length assures long life.

This truck can be furnished with any size wheel or axle and to any track gauge.

Prices on Request

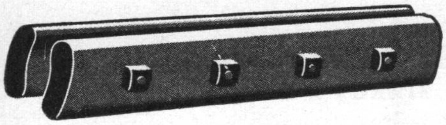
STEEL RAILS



Our stock is approximately as follows: 8 to 20 lb. rails, 15 to 20 ft. lengths; 30 and 45 lb. rails, 20 to 30 ft. lengths. When ordered this way no length extra will be charged.

Wt. yard, lbs.	Per 100 lbs.	Height, in.	Width base flange, in.	Width head, in.	Size bolt, in.
8	$15.08	1 9/16	1 9/16	25/32	1½x⅜
12	14.88	2 3/64	1¾	59/64	1¾x½
16	14.68	2 7/16	2	1 7/64	1¾x½
20	14.48	2 43/64	2¼	1 17/64	2 x½
30	14.28	3 11/64	2¾	1 13/32	2½x⅝
45	14.08	3 47/64	3⅜	1 63/64	3¼x¾

RAIL SPLICE BARS

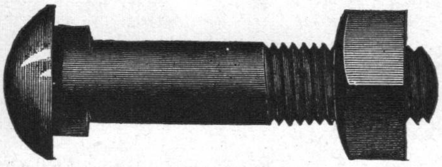


Sold per pair.

Furnished without bolts. Bolts must be ordered separately.

For rail, lbs.	Per pair	Length, in.	Thickness, in.	C to C of holes, in.	Bolts, in.
8	$0.66	16⅛	7/32	4x4⅛x4	1½x⅜
12	.72	16⅛	5/16	4x4⅛x4	1¾x½
16	.90	16⅛	5/16	4x4⅛x4	1¾x½
20	.98	16⅛	5/16	4x4⅛x4	2 x½
30	1.44	16⅛	7/16	4x4⅛x4	2½x⅝
45	2.00	20	9/16	5x5⅛x5	3¼x¾

TRACK BOLTS

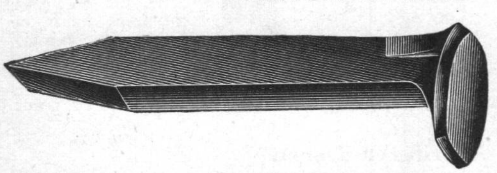


In 200 lb. kegs.

Sold per cwt. $1.00 per cwt. advance over base for broken kegs.

Size, in.	1½x⅜	1¾x½	2x½	2½x⅝	3¼x¾
No. per 200 lb. keg	1740	1600	900	485	281
Size rail, lbs.	8	12&16	20	30	45
Per 100 lbs.	$31.20	30.15	29.80	28.00	26.00

TRACK SPIKES



In 200 lb. kegs.

Sold per cwt. $1.00 per cwt. advance over base for broken kegs.

Size, in.	2½x5/16	3x⅜	3½x⅜	3½x½	4x½	5½x9/16
No. per 200 lb. keg	2260	1400	1248	760	642	390
Size rail, lbs.	8	12	16	20	30	45
Per 100 lbs.	$27.80	21.50	20.90	20.30	19.40	19.10

QUANTITIES OF RAILS AND ACCESSORIES REQUIRED

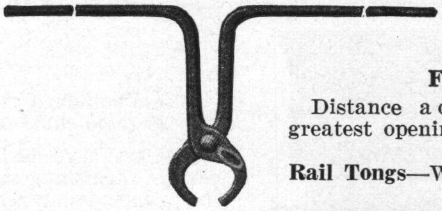
Per Mile of Track

Based on 20 ft. random lengths of rail. Quantity of spikes based on 2 ft. center to center. No excess has been allowed.

2160 bolts and 10560 spikes required per mile.

Size of rail, lbs.	8	12	16	20	30	45
Rails, gross tons	12.57	21.12	28.16	35.20	52.80	79.20
Splices, pairs	540	540	540	540	540	540
Bolt, lbs.	199	412	412	439	891	1571
Spikes, lbs.	935	1509	1692	2779	3290	6212

RAIL TONGS



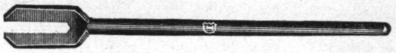
Forged Steel

Distance across handles 44 in.; greatest opening 3¼ in.

Each

Rail Tongs—Wt. each 20 lbs. ...$9.52

RAIL FORKS



Forged Steel

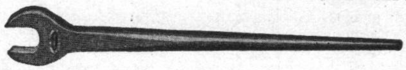
Slot 5¼ in. deep, ¾ in. wide.

Each

Rail Fork—30 in. long; wt. each 13½ lbs. $6.60

TRACK WRENCHES

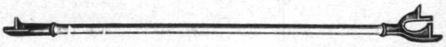
SINGLE END



Forged Steel

Bolt, in.	¾	⅞	1	1⅛	1¼	1⅜	1½
Opening, in.	1 5/16	1½	1 11/16	1⅞	2 1/16	2¼	2 7/16
Length, in.	30	30	36	36	42	48	48
Wt. each, lbs.	5½	6½	8½	11¾	13¾	16	17
Each	$4.36	5.12	5.60	**Prices on Request**			

TRACK GAUGES



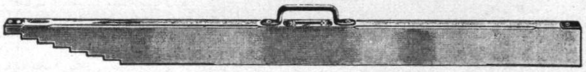
Malleable Iron End Castings

Pipe centers.

Each

Track Gauges—Wt. each 10 lbs. $9.75

TRACK LEVELS



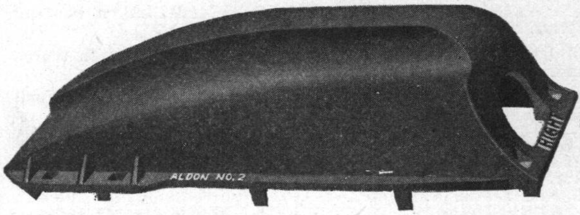
Steel Bound

Made from thoroughly seasoned Washington fir. Accurately tested.

Each

Track Levels—Wt. each 10 lbs. $24.00

CAR REPLACERS



Pressed Steel Plate

Extra strong, with less weight to carry and handle.

	Per pair
No. 1—**Extra heavy,** height of rail 6 in.; wt. per pair 212 lbs.	$144.00
No. 1—**Standard,** height of rail 6 in.; wt. per pair 164 lbs.	124.00
No. 2—**Standard,** height of rail 4½ to 5½ in.; wt. per pair 158 lbs.	116.00
No. 3—**Light,** height of rail under 4½ in.; wt. per pair 68 lbs.	70.00

All above, open stock.

MINE TRACK EQUIPMENT

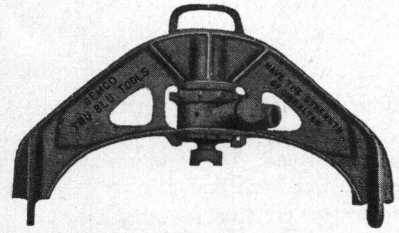
We can furnish any kind of mine track equipment to meet today's demands, such as frogs, switches, turnouts, fastenings, crossings, etc.

We handle the above lines made by the C. S. Card Iron Works of Denver who can manufacture all kinds of track equipment made to special specifications.

Estimates Gladly Furnished on Receipt of Your Requirements

RAIL BENDERS-STRAIGHTENERS

GEMCO TRU-BLU



Standard Type; Roller Bearing Equipped

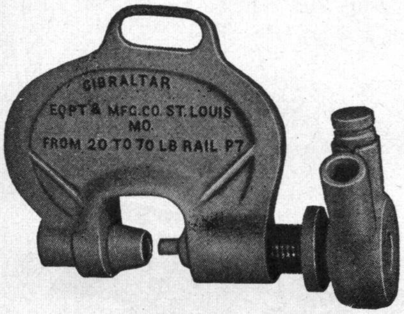
Gemco Tru-Blu benders are the lightest, fastest and easiest operating on the market. They are made from "Gemloy" alloy steel, almost as light as aluminum but far stronger.

Note—Ratchet type illustrated is available on request.

Nos.	Each	For rail, lbs.	Wt. each, lbs.
B-2	**$ 66.00**	8–25	23
B-4	**92.50**	20–40	30
B-8	**149.00**	40–80	53

RAIL PUNCHES

GEMCO TRU-BLU



Standard Type

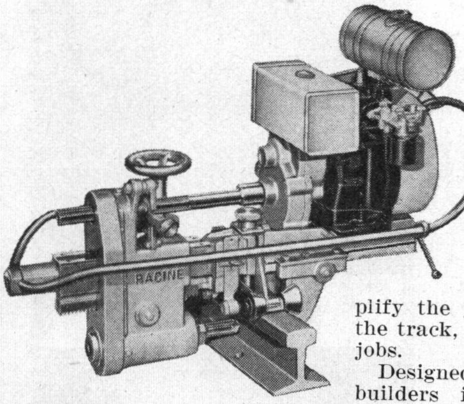
The Gemco Tru-Blu Punches, made from "Gemloy" steel, are absolutely the lightest weight, heavy duty, strongest punches on the market. One man can punch a hole in steel rail in less than one minute. The tool frames are guaranteed against breakage for 1 year.

Note—Ratchet type illustrated is available on request.

Nos.	Each	For rail, lbs.	Wt. each, lbs.
P-4	**$112.00**	8–40	22
P-7	**130.00**	8–70	40

PORTABLE RAIL DRILLS

RACINE



A Precision Machine for Rugged Service Light and Fast

The Racine Rail Drill is actually a powerful, compact drill press, built on horizontal, instead of vertical lines. It is designed to speed up and simplify the job of rail drilling in the track, on maintenance repair jobs.

Designed by machine tool builders in collaboration with railroad men of long experience in maintenance-of-way problems and requirements.

The 2 HP, 4-cycle gasoline engine drives the drill chuck through a 30-1 reduction gear. There is more than adequate power to drill holes through all rail web in one or two minutes. A quick acting drill holder provides easy changing of drills. Built-in high tension fly-wheel magneto insures quick, easy starting.

Easy to handle. Carrier guard protects the operating mechanism and provides a ready means for lifting machine onto track cars or other conveyance. Mounted on rollers, the machine can be easily pushed along the rail by one man.

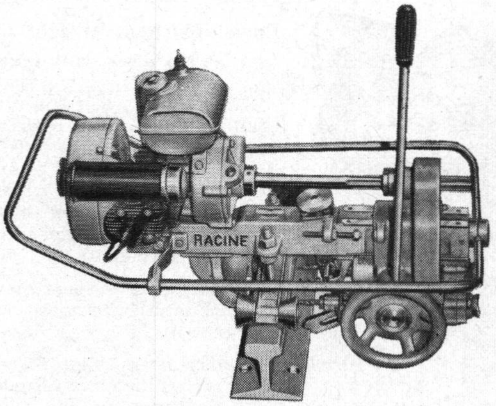
Self-retrieving, replaceable type starter. Lubrication by Zerk fittings, grease packed gears.

	Each
Racine Rail Drill—18x44 in. over all; uses standard flat type rail drills; fits all rails; wt. each 165 lbs.	$475.00

All above, open stock.

PORTABLE RAIL BOND DRILLS

RACINE



Precision Built, Produces Clean, Straight Holes

Racine presents this portable bond drill for long life, accurate work, easy upkeep and low drill cost. Designed like a drill press on horizontal lines, this unit combines the rugged features needed for outdoor work with the precision and simplicity so important for the steady day in and day out service demanded of all railroad equipment.

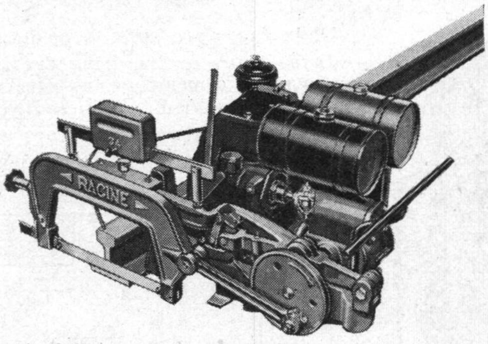
Quickly drills the necessary holes in head or web of all sizes of rails. Either one or both drilling spindles may be used. Ample power is provided by a standard 2-cycle, 1¼ HP air-cooled gasoline engine. A built-in self-retrieving steel cable starter insures quick starting through fly-wheel magneto.

Controlled hole depth; lightness with great strength; ready portability; easy movement along rail; accurate straight holes for perfect bond alignment; Zerk lubrication fittings; grease packed gears.

	Each
Racine Rail Bond Drill—17x32 in. over all, uses standard bond drills; wt. each 90 lbs.	$395.00

PORTABLE RAIL CUTTERS

RACINE



For Simple, Fast Safe Rail Cropping

A portable power saw designed for the sole purpose of cutting rail in the track. It produces clean, smooth cuts fast, accurately and at low cost. The grain structure of the rail is neither burned nor shattered. Reduces the possibilities of rail failures that result from fractures started by torch cutting or the nick and break method of cropping.

Easily removed or placed on the track. Only one operator is required to run the machine and make the cut.

Equipment includes gasoline engine, water tank for cooling blade, lifting handles, and two blades.

Engine is 4-cycle, 1750 RPM, giving 95-100 blade strokes per minute.

Use blades 14 in. long, with 6 teeth per inch, 1¼ in. wide, .065 in. thick.

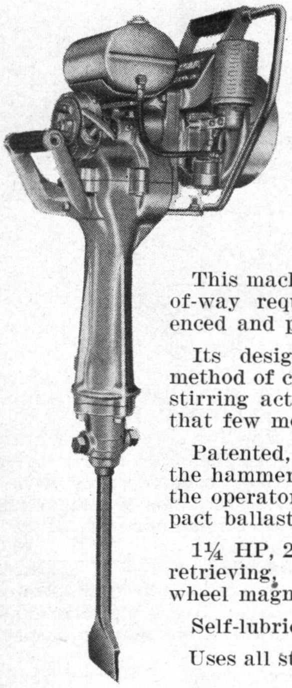
Length over all 36 in., height over all 18 in., width over all 14 in.

Nos.	15	16
Capacity, in.		
Height	7⅜	10
Across the base	6¾	6¾
Stroke, in.	6	5
Wt. each, lbs.	300	350
Each	$570.00	600.00

All above, open stock.

PORTABLE POWER TIE TAMPERS

RACINE



Power Without Weight—Long Life with Low Maintenance

A completely self-contained power tamping unit. It is light in weight, easy to carry, trouble-free and long-lived. It reduces the manual effort of the operator and gives uniform and properly packed ballast in a fraction of the time required by pick and bar methods.

This machine was created to meet maintenance-of-way requirements as represented by experienced and practical railroad men.

Its design, embodying a simple but unique method of creating a hammer blow combined with stirring action of the tamping bar, is so simple that few moving parts are needed.

Patented, special alloy spring assembly throws the hammer and cushions the recoil. No shock on the operator. No manual pressure needed to compact ballast.

1¼ HP, 2-cycle air cooled gasoline engine. Self-retrieving, replaceable cable type starter; flywheel magneto.

Self-lubricating except two Zerk grease fittings.

Uses all standard tamping bars, moil points, etc.

Each

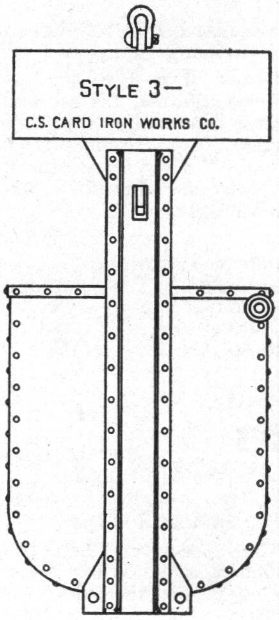
Power Tie Tamper—15x30 in.; wt. each 60 lbs. ....$......

Open stock.

Prices on Request

MINE SKIPS

"CARD"



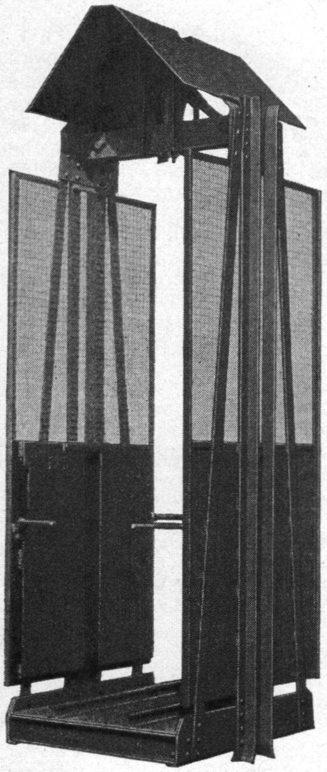
Skips for hoisting in vertical shafts are designed and built to meet operating conditions. It is impractical to illustrate all the variations used in skip design for this purpose.

Dump shoes for self-dumping skips can be supplied when specified.

In ordering or inquiring for information on these skips, please furnish us the shaft dimensions as per outline drawing at bottom of page. Also advise the body capacity desired in cubic feet, and the weight per cubic foot of the material that will be handled.

MINE CAGES

"CARD" PLAIN



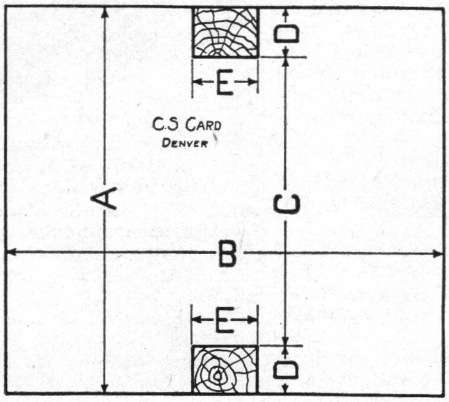
Cage No. 2622

Plain cages are built to meet the operating conditions.

In ordering or inquiring for information, please furnish us the shaft dimensions, as per outline drawing below, and the total gross load to be handled.

Advise whether or not doors are required.

Landing chairs for use with plain cages can be furnished.

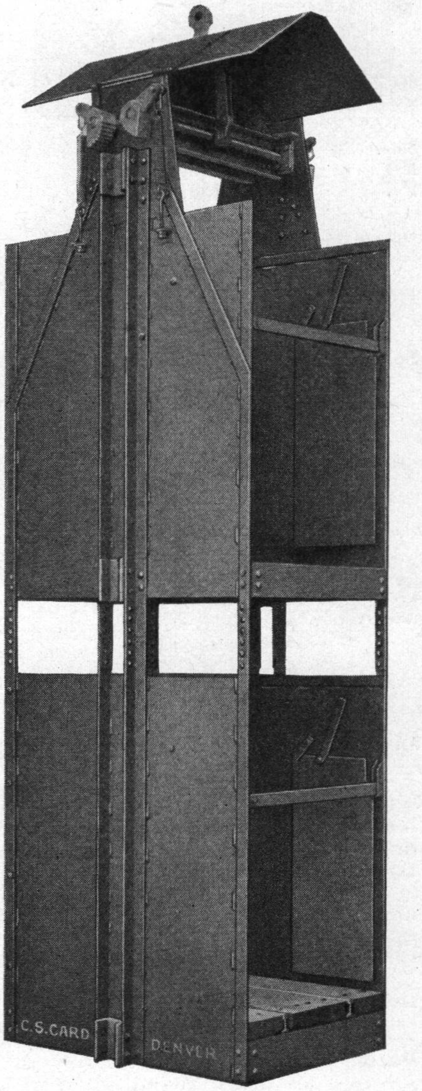


Shaft Dimensions

This sketch shows the shaft dimensions required by us to correctly furnish Skips, Cages, Landing Chairs, etc.

"E" to be the actual width of the guide as we will allow the necessary clearance.

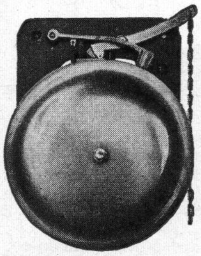
"A" and "B" only, required for plain landing chairs.



Cage No. 2011

TRIP GONGS

STANDARD



No. 60—Nickel Plated Gong

Gong shell is of hot pressed steel; base is of gray iron painted black; hammer and lever are of cast brass.

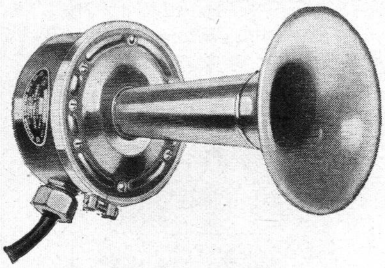
Gong rings once for each down pull of the lever; chain is not included.

Size, in.	8	10
Wt. each, lbs.	6	8¼
Each	$9.50	11.00

One in a box.

MINE HOWLERS

BENJAMIN TYPE SNP



Electrically Operated

These sturdily constructed Mine Type Howlers are effectively sealed against dust and moisture.

They are of separable construction with a vibrator type sounding mechanism and easy installation features including the plug-in type of wiring connection.

***Alternating Current**			**Direct Current**		
Nos.	Each	Volts	Nos.	Each	Volts
8652-12V	$20.65	†12	**8651-6V**	$23.95	6
8652-24V	20.65	†24	**8651-110V**	23.95	110
8652-110V	20.65	110	**8651-220V**	23.95	220
8652-220V	20.65	220	**8651-250V**	23.95	250

Weight each 4 pounds.

One in a box.

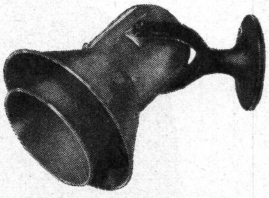
*60 cycles standard. 25 cycles, in all voltages, supplied at 60 cycle prices.

†Require signal transformers as bell ringing type does not have sufficient capacity.

Special Voltages—To order special voltages drop voltage suffix of regular number and substitute desired voltage. Prices on special voltages on request.

INDUSTRIAL SIRENS

FEDERAL WEATHERPROOF, ELECTRIC



Type "A"

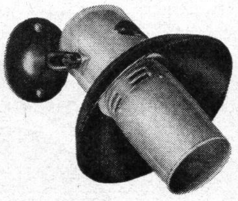
A famous industrial siren. Its wail is easily recognized through a confusion of other sounds.

Its weatherproof housing of sheet metal is amply protected by a generous coating of red lacquer. For special applications, such as in unusually corrosive atmosphere, it can be furnished of solid brass or copper.

Equipped with an adjustable bracket to permit mounting at any desired angle.

Available in any standard voltage from 6 to 120 volts. The motor is universal AC or DC and on alternating current will operate on any cycle from 25 to 60. A definite voltage must be specified on order, however.

	Each
Type "A"—Net wt. each 13 lbs.; shipping wt. 15 lbs.	$55.00

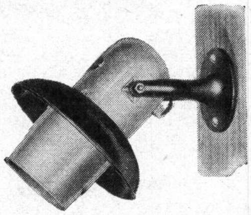


Type "J"—Heavy Duty

Incorporate many improvements. Improved air intakes and sound projectors utilize and direct sound waves with the utmost efficiency. Increased durability has been attained without any sacrifice of volume, and in fact, has created improved tone and performance. Lower current consumption reduces the heat rise. High pitched.

Universal motor. Available for 110, 220 or 250 volts.

	Each
Type "J"—Net wt. each 15½ lbs.; shipping wt. 18 lbs.	$65.00



Type "L"—Heavy Duty

Same as type "J" but more powerful, averaging about 150 cycles per second lower in sound frequency.

Universal motor; available for 110, 220 or 250 volts.

	Each
Type "L"—Net wt. each 16½ lbs.; shipping wt. 19 lbs.	$70.00

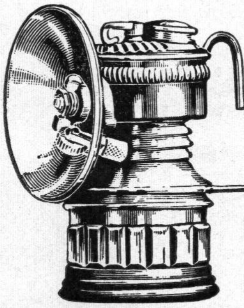
All above, one in a box.

Note—In ordering sirens specify voltage.

Note—Other models of Industrial and Traffic Sirens are available to meet every need.

MINERS' LAMPS

CARBIDE



Round Hook

Patented valve cleaner. Sturdy burner type assembly. Convenient and easily detached. Wire brace. Prong lid drains to prevent spouting. Self-lighting.

Polished brass finish, chromium plated reflector.

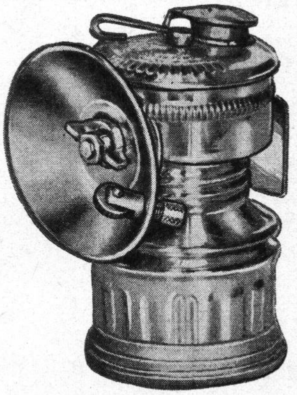
Burns 2 to 3 hours on one filling. Bottom diameter 2¼ in., charge 2 oz.

	Per dozen
No. 285—2½ in. reflector; wt. per dozen 7 lbs.	**$18.00**

One in a box.

MINERS' LAMPS

CARBIDE



Flat Hook

Solid brass, polished and lacquered. Chromium plated reflector. New type flat hook for hard hats. Patented valve cleaner, sturdy burner type assembly, highest quality long lasting lava tips.

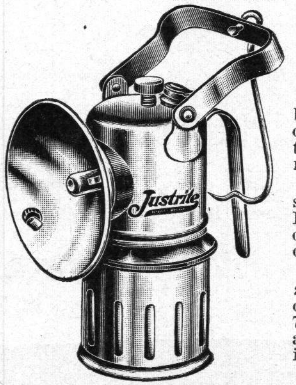
Burns 2 to 3 hours on one filling. Bottom diameter, 2¼ in., charge 2 oz.

	Per dozen
No. 526—2½ in. reflector; wt. per dozen 7 lbs.	**$18.00**

One in a box.

HAND LAMPS

CARBIDE



Automatic Feed

Valve stem can be taken out for cleaning and the light will not go out.

Gives a bright, steady flame. Burns 8 hours on 8 oz. of ½ in. carbide.

4 in. reflectors are heavy gauge, chrome plated. 7 in. reflectors are highly polished nickel.

Nos.	Per dozen	Reflector, in.	Finish	Wt. dozen lbs.
	Bail and Hook Handles			
2-50D	$54.00	4	Steel	22
2-50E	58.80	4	Brass	22
	Back Handles			
2-56D	$52.20	4	Steel	22
2-56E	55.20	4	Brass	22
2-57D	60.00	7	Steel	27
2-57E	63.60	7	Brass	27

Nos. 2-50D to 2-56E, two dozen; No. 2-57D and 2-57E, one in a carton.

REPAIR PARTS

We can furnish all repair parts for Carbide Miners Lamps and Hand Lamps.

Prices on Request.

CARBIDE

SHAWINIGAN

SHAWINIGAN
S
SH
C

A high grade product for use in oxyacetylene process for the welding and cutting of metals; or illumination in the miner's cap lamps, inspection lanterns and contractors' flare lights.

All sizes listed are for use in acetylene generators, with the pea size especially suited for carbide lamp plants.

Generator
In 100 lb. Steel Drums

	Per 100 lbs.
No. 14N.D.	$7 55
Rice	7.55
¼x1/12 in.—Pea	7.20
1¼x⅜ in.—Nut	7.20

Shipping weight per drum 107 pounds.

Miner's Lamp

Selected for correct uniform size, high gas yield and freedom from dust.

	Per case
2 lb. cans—24 cans in a case	$ 8.10
10 lb. cans—10 cans in a case	13.30

	Per drum
25 lb. drum	$2.55
100 lb. drum	7.45

CARBIDE CANS

POCKET

TRADE
MADE IN
JUSTRITE
U.S.A.
MARK

Tin Coated

Light steel, ribbed, double seamed, airtight; sliding cover. Concaved to fit boot or hip pocket.

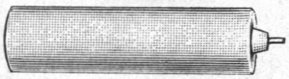
Holds full day supply.

	Per dozen
No. 77—Cap. 10 oz.; wt. per dozen 2¾ lbs.	$2.76

One dozen in a box.

MINERS' CANDLES

GRANITE



6 in. Long

6 candles in a set.

	Per dozen
Miners' Candles—Wt. per set 14 oz.	$0.90

Forty sets in a case.

PROTECTIVE CAPS

M.S.A. SKULLGARD TYPE D

Molded black bakelite composition offering comfortable, light-weight, highly efficient head protection. Very popular with coal miners in particular.

	Each
Type D—With lamp bracket and genuine leather sweatband, in ⅛ sizes from 6 to 8 inclusive; wt. each ¾ lb.	$4.90

Twelve in a carton.

PROTECTIVE HATS

M.S.A. SKULLGARD TYPE K

Has extensive application in every industrial field where head injury hazards exist, including metal mines, steel mills, oil fields, chemical plants, etc. The high dielectric strength and fracture-resisting qualities of Skullgards have effected a remarkable reduction in head injuries throughout industry.

⅛ sizes from 6 to 8 inclusive.

With Genuine Leather Sweatband

	Each
Type K—With lamp bracket	$5.40
Type K—Less lamp bracket	5.15

Weight each 1 pound.
Twelve in a carton.

Extra Sweatbands for Types D and K

	Each
Standard Genuine Leather—Sizes as specified	$1.45
Standard Leatherette—Sizes as specified	1.25
Adjustable Genuine Leather—In "small" sizes (6⅛ to 7⅛ incl.) and "large" sizes (7⅛ to 7¾ incl.), head sizes can be preselected with assurance of correct fit to standard hat sizes of ⅛ graduations	1.90
Adjustable Leatherette—Otherwise same as leather band	1.45

PROTECTIVE HATS

M.S.A. McDONALD TYPE T

Made of an extremely tough aluminum alloy composition, ribbed for added strength. Headbands are fully suspended for maximum shock absorption. It is light in weight, cool and comfortable—a hat workmen like to wear.

Furnished in two shell sizes to accommodate all headband sizes. Headbands are easily replaceable.

With Genuine Leather Headband

	Each
Type T—"Small" sizes (6⅝ to 7⅛ incl.), "large" sizes (7¼ to 7⅝ incl.); wt. each 11¾ oz.	$6.00

Twelve in a carton.

BULLARD HARD BOILED

Made of an entirely new waterproof material. Crown is made up of innumerable long, interlocked fibres, impregnated and bonded with a resinous binder.

Water and moisture proof, shock absorbing and has uniform resistance to fracture under impact. Non-conductor of electricity.

The impact of a falling object is partially absorbed by the crown and the rest by the wide web hammock or inner cap. This hammock can be instantly removed for cleaning or replacement and is adjustable to all sizes or shape heads.

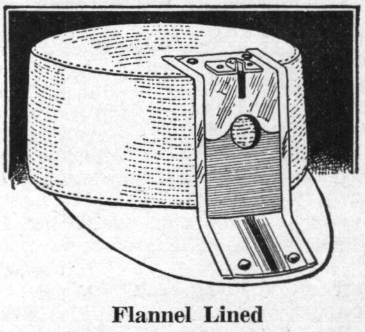
With Lamp Bracket

	Each
No. 70-503—Wt. each 1 lb.	$5.00

Twelve in a carton.

MINERS' CAPS

WATERPROOF DUCK



Flannel Lined

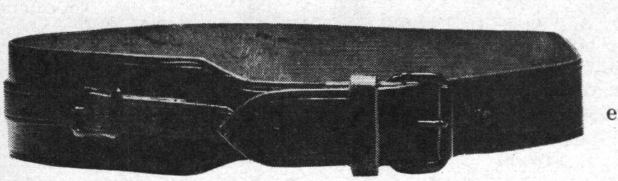
Visor of heavy material covered with waterproof duck. Lamp bracket of 2X tin interlined with vulcanized fibre. Strong and will hold carbide lamp securely.

	Per dozen
No. 27—All sizes; average wt. per dozen 4 lbs.	$8.50

One dozen in a carton.

MINERS' BELTS

LEATHER



3 in. Wide

Two-piece black leather, roller buckle, check snap.

For carrying batteries.

Size, in.	32	34	36	38	40	42	44
Each	$2.50	2.50	2.50	2.50	2.50	2.50	2.50

Average weight per dozen 9 pounds.
Open stock.

Note—For the very best Lifeline Rope see Nylon Rope, page 575.

BRATTICE CLOTH

J.M.D.
BRATTICE CLOTH

Flameproof—Sturdy—Economical

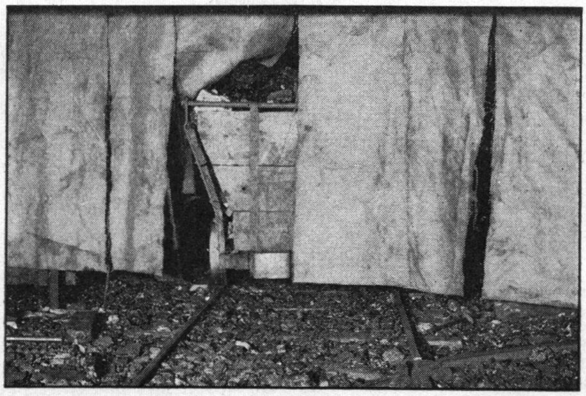
Tightly woven of best imported Sovereign quality jute, J.M.D. Brattice Cloth permits minimum air seepage, effectively deflecting air current to the workmen at their places.

Selected Long Fibre Quality jute for long wear.

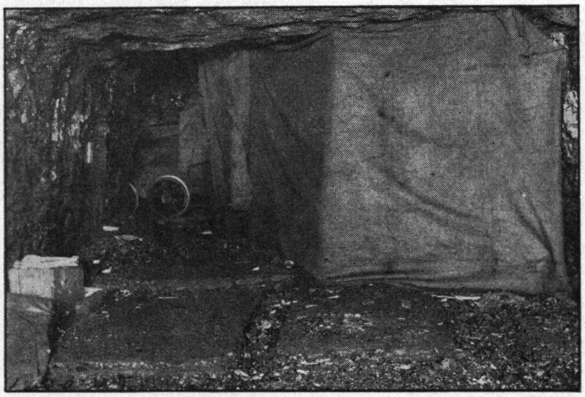
Careful Flame-Proofing for reduction of fire hazard.

Exact Specifications for maximum value in air delivery.

Rigid Inspection of every yard to assure you that J.M.D. Brattice Cloth is the best available.



U.S. Bureau of Mines 22057
Check Brattice—Holding Air on Main Haulage Way



U.S. Bureau of Mines 22058
Line Brattice—Diverting Air From Haulage Way Up to Face

The Safety Element is the most important factor to be considered when choosing Brattice Cloth. "Is it safe from possible sparks and will it deliver air to the working places?" is the question the wise purchasing agent, mine superintendent, foreman and fire boss will ask.

J.M.D. Brattice Cloth answers these questions itself. It will not catch sparks to smolder or ignite the lurking mine gases and its uniform high count assures abundant air delivery. Old and torn or leaky brattice is a menace to the health and efficiency of the workmen, a danger to the mine and a waste of horsepower at the fan.

Both the uniform construction and chemical treatment assure the user of J.M.D. Brattice Cloth the maximum safety and ventilation.

Available in No. 10 Medium and No. 12 Heavy

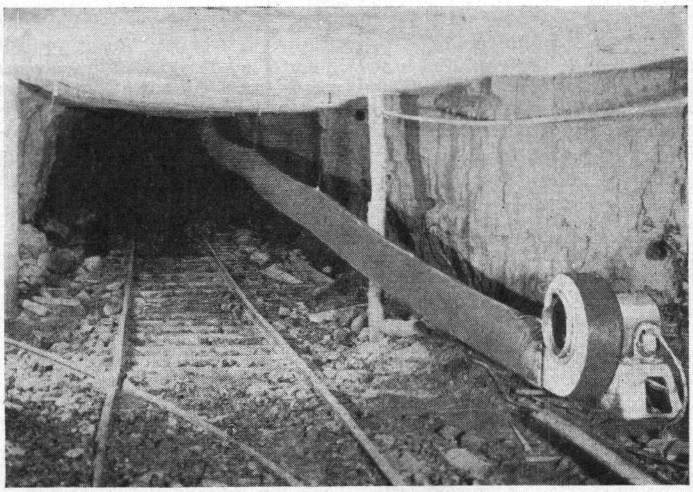
Both grades are made of the same high quality jute.

Made in 36, 42, 48, 60, 72, 84, 96, 108 and 120 in. widths, in rolls of 25, 50 and 100 lineal yards.

Prices on Request

VENTILATION TUBING

FLEXIPIPE



Flexipipe is a flexible air duct made of strong material chemically impregnated to render waterproof and airtight.

It conducts a fresh supply of air from a fan or blower to any point desired, ventilates blind headings, such as tunnels, air and water courses, facilitates sinking of shafts and permits driving of parallel entries without crosscuts. It eliminates lost time after blasting by instantly replacing smoke and gas-laden atmosphere with fresh air.

Tubing is hung from an overhead wire by metal hooks supplied with the tubing. Can be suspended from any ordinary wire not less than ⅛-inch diameter attached to roof at about 15-foot intervals.

To couple together any 2 lengths of Flexipipe, compress one coupling and insert into other. The compressed coupling when released will expand and make a tight joint.

Flexipipe must be used with a pressure blower, and a direct-connected motor blower outfit is recommended.

Jute Grade, With Sewed-In Couplings

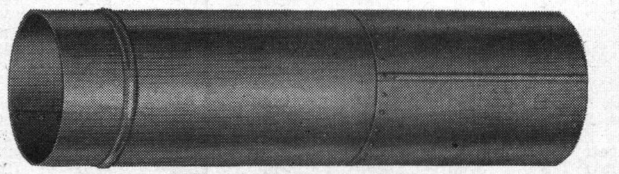
Recommended where tubing of high tensile strength is needed. Specially treated to render it highly resistant to gases, heat, fungus growth, acid and mine waters.

	25 ft. Length		50 ft. Length		100 ft. Length	
Diam., in.	Per length	Wt. lgth., lbs.	Per length	Wt. lgth., lbs.	Per length	Wt. lgth., lbs.
8	$18.70	16	$32.95	28	$62.30	52
12	24.70	23	42.60	40	81.00	76
16	30.30	29	53.90	53	101.15	94
18	36.30	35	66.15	62	126.65	112
20	43.15	41	78.60	76	150.50	142
22	54.05	47	99.20	82	......	...
24	59.10	53	109.10	89	......	...
30	74.55	64	132.35	115	......	...
36	88.30	77	146.60	132	......	...

Open stock.

STEEL AIR PIPE

LOCK SEAM



Galvanized, Screw Joint

Lock Seam is an excellent pipe for underground ventilation, being strong, light in weight and inexpensive.

Made in 3 ft. sections equipped with easy-to-assemble screw joint which requires only a simple twist to connect.

Make-up length for each section is 34⅝ in. after connecting.

20 Gauge, 3 ft. Sections

Diam., in.	4	5	6	8	10
Wt. per foot, lbs.	2.2	2.7	3.2	4.25	6.2
Per foot	$0.52	.61	.70	.91	1.18

Open stock.

MINE VENTILATION BLOWERS

COPPUS

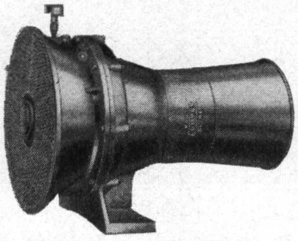
Compressed Air Driven

Coppus Fans furnish fresh air for the working faces, for tunnel driving, for reaching inaccessible places, for ventilating dead ends or raises, for rapid advance of main headings, eliminating cross cuts, for dilusion and expelling of dust-laden air or powder gases in a quick manner, for gangways, where gases collect at face beyond the last break-through, for driving through old workings, for reopening old mines, for rescue work in case of fire, explosion, etc. When connected to flexible or rigid tubing, blowers deliver an ample supply of refreshing air to remote parts and out-of-the-way places, where generally the heaviest work is being done.

As Coppus Blowers are good for a maximum of about 90000 CFM, they can be used for main ventilation in mines of small and medium size; they take care of secondary and auxiliary ventilation in mines of any size.

Coppus Blowers will stand up for many years under the severest operating conditions, as they have been designed for rough handling.

For submitting quotations, the following information is required: Capacity in CFM; length and diameter of ventilating pipe; compressed air pressure; a rough sketch showing the proposed installation. A rough sketch tells more than a long description.



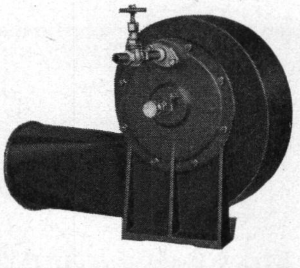
Type "SP" Vano—Propeller Type

The Vano is a medium pressure propeller fan, delivering relatively large volumes of air. It operates efficiently in connection with ventilating pipes of a few hundred feet length.

Axial flow of the air, entirely unrestricted, so that the Vano is installed in a duct like a piece of pipe. Power consumption is constant at constant speed, irrespective of length and diameter of ventilating pipe. The aluminum propeller fan is equipped with guide vanes of peculiar design beyond the fan. A ring carrying the turbine buckets is shrunk around the periphery of the fan. There is only one heavy shaft supported by two oversized ball bearings, securing smooth running, perfect alignment and minimum wear.

Under 10-inch ventilating pipe of 200-ft. length, blower SP-175 gives 1120 CFM with a compressed air consumption of 21 CPM of free air compressed to about 75 pounds.

Weight, No. SP-125, 70 lbs.; No. SP-175, 140 lbs.; No. SP-250, 270 lbs.; No. SP-300, 375 lbs.; No. SP-350, 485 lbs.; No. SP-425, 950 lbs.



Type "T" Ventair—Centrifugal Type

The Ventair gives higher static pressures than the Vano and is the typical fan for longer ducts.

A centrifugal blower which embodies the latest developments in fan construction. A ring containing the turbine buckets is shrunk on back of the aluminum fan which has backward curved blades with the result of non-overload characteristics. The Ventair is of single unit design with only one heavy shaft supported by two large ball bearings.

The centrifugal blower T-4 furnishes about the same quantity of air as the Vano, 1100 CFM, with an air consumption of 43 cubic feet, the Vano type being far superior in this particular case. But with increasing length of the 10-inch pipe, the performance of the Ventair gains over that of the Vano, and the latter drops out entirely at 1500 feet.

Weight, No. T-3, 100 lbs.; No. T-4, 130 lbs.; No. T-5, 160 lbs.; No. T-6, 540 lbs.; No. T-8, 910 lbs.

Capacity in Cubic Feet per Minute

Type and size of blower	Length of air pipe, ft.													*Compressed air consumption
	100	200	300	400	500	600	800	1000	1200	1500	2000	2500	3000	
Air Delivery in Cubic Feet per Minute for 6-Inch Ventilating Pipe														
Vano SP-125	385	285	235	205	...	...	...	...	...	...	...	...	...	10
Ventair T-3	650	570	500	460	425	395	355	320	300	275	240	220	200	39
Air Delivery in Cubic Feet per Minute for 8-Inch Ventilating Pipe														
Vano SP-125	625	535	470	422	380	350	300	...	...	...	...	...	...	10
Vano SP-175	920	720	600	525	470	425	370	330	...	...	...	...	...	21
Ventair T-4	1035	900	810	745	700	660	600	555	520	475	425	385	350	43
Air Delivery in Cubic Feet per Minute for 10-Inch Ventilating Pipe														
Vano SP-175	1350	1120	965	860	775	700	600	530	475	...	...	...	...	21
Ventair T-4	1200	1100	1020	960	915	875	810	760	720	670	610	560	520	43
Ventair T-5	1850	1570	1390	1270	1180	1120	1020	940	880	810	725	660	610	69
Air Delivery in Cubic Feet per Minute for 12-Inch Ventilating Pipe														
Vano SP-175	1575	1425	1310	1215	1135	1070	960	870	790	680	...	...	...	21
Vano SP-250	2700	2180	1880	1670	1520	1400	1220	1090	990	880	735	620	...	52
Ventair T-5	2100	1900	1760	1650	1570	1500	1385	1290	1220	1130	1030	950	885	69
Ventair T-6	3520	3140	2870	2650	2480	2330	2110	1940	1810	1670	1490	1360	1240	170
Ventair T-8	4720	3960	3450	3100	2840	2650	2360	2120	1950	1760	1540	1380	1260	270
Air Delivery in Cubic Feet per Minute for 16-Inch Ventilating Pipe														
Vano SP-250	3770	3450	3180	2920	2720	2540	2270	2050	1880	1700	1490	1320	1190	52
Vano SP-300	5150	4480	3975	3570	3250	3000	2625	2350	2140	1925	1670	1500	1360	105
Vano SP-350	6460	5300	4450	3930	3530	3270	2870	2570	2340	2090	1800	1580	1440	170
Ventair T-6	3880	3730	3590	3470	3370	3270	3100	2950	2820	2660	2440	2270	2120	170
Ventair T-8	5700	5300	4940	4660	4420	4220	3900	3650	3420	3150	2830	2580	2380	270
Air Delivery in Cubic Feet per Minute for 20-Inch Ventilating Pipe														
Vano SP-300	6150	6050	5700	5400	5100	4875	4480	4150	3900	3550	3125	2820	2570	105
Vano SP-350	9025	8075	7270	6650	6210	5840	5175	4670	4300	3875	3400	3070	2780	170
Vano SP-425	11700	9850	8650	7750	7000	6450	5650	5050	4600	4150	3600	3220	2950	300
Ventair T-8	6060	5880	5720	5580	5440	5320	5100	4900	4730	4520	4210	3980	3780	270
Air Delivery in Cubic Feet per Minute for 24-Inch Ventilating Pipe														
Vano SP-350	9600	9120	8650	8200	7800	7480	6900	6450	6050	5560	4940	4450	4100	170
Vano SP-425	14000	12600	11500	10600	9850	9300	8250	7500	6850	6200	5410	4820	4350	300

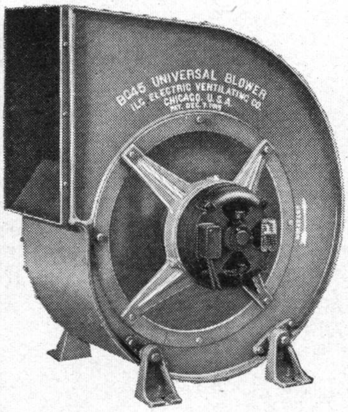
*Air consumption in cubic feet of free air per minute compressed to 75 pounds.

Detailed information on longer or intermediate lengths furnished upon application.

Prices on Request

BLOWERS

ILG TYPE BC



Backward Curved Blades

Load-limiting type for ventilating and air conditioning applications where static resistance may vary. Motor load remains constant over wide range of air volume and change in static pressure. No need for excess motor horsepower. No chance of motor overload where resistance is less than calculated.

Motor and wheel are permanently aligned by directly driving wheel from motor shaft, avoiding money-wasting friction from belts, gears or sheaves—permitting partial recession of motor in side of casing to save floor space. Mount on floor, wall or ceiling.

Blower has high efficiency available in direct-connected and belted single width, single inlet types and belted double width, double inlet type. The discharge is universal.

Enclosed speed regulators furnished with direct current blowers.

For frequencies other than 60 cycle add 5%.

		Direct Connected								Belted			
		60 Cycle, AC					DC			Single width, single inlet		Double width, double inlet	
		2 and 3 Phase		1 Phase									
Size, Nos.	RPM	220 or 440 volts, each	550 volts, each	110 volts, each	220 volts, each	Wt. ea., lbs.	110 or 220 volts, each	550 volts, each	Wt. ea., lbs.	Each	Wt. ea., lbs.	Each	Wt. ea., lbs.
BC25	1140	$ 331.00	$ 356.00	$381.00	$354.00	180	$ 354.00	$ 380.00	190	$......	..	$.......	...
BC25	1750	339.00	364.00	407.00	369.00	180	474.00	499.00	190	185.00	95	....	...
BC30	1140	363.00	389.00	439.00	393.00	215	400.00	426.00	230	......	..	....	...
BC30	1750	372.00	396.00	......	422.00	215	569.00	594.00	230	226.00	140	....	...
BC35	855	394.00	427.00	490.00	434.00	260	443.00	476.00	260	......	...	....	...
BC35	1140	406.00	438.00	517.00	451.00	250	604.00	637.00	260	......	...	....	...
BC35	1750	671.00	......	......	......	330	1000.00	1033.00	400	292.00	170	....	...
BC40	855	438.00	546.00	575.00	483.00	315	644.00	678.00	375	......	...	....	...
BC40	1140	586.00	619.00	......	On app.	390	961.00	994.00	425	......	...	....	...
BC40	1750	820.00	851.00	......	......	445	1393.00	1426.00	525	364.00	250	....	...
BC45	685	618.00	651.00	......	668.00	455	924.00	957.00	500	......	...	....	...
BC45	855	627.00	661.00	......	688.00	490	965.00	998.00	525	......	...	....	...
BC45	1140	761.00	......	......	......	515	1164.00	1197.00	650	430.00	350	....	...
BC50	685	772.00	794.00	......	840.00	550	1000.00	1033.00	600	......	...	....	...
BC50	855	798.00	831.00	......	882.00	600	1306.00	1338.00	650	......	...	....	...
BC50	1140	932.00	965.00	......	......	640	1642.00	1692.00	725	520.00	400	960.00	600
BC55	570	745.00	778.00	......	806.00	700	1059.00	1092.00	750	......	...	....	...
BC55	685	805.00	838.00	......	901.00	800	1170.00	1141.00	850	......	...	....	...
BC55	855	827.00	861.00	......	......	900	1304.00	1338.00	1050	596.00	475	1187.00	700
BC60	570	801.00	834.00	......	On app.	800	1293.00	1326.00	900	......	...	....	...
BC60	685	861.00	894.00	......	......	850	1507.00	1540.00	1000	......	...	....	...
BC60	855	987.00	1036.00	......	......	950	2193.00	2244.00	1200	672.00	890	1293.00	1100
BC65	570	1198.00	1245.00	......	......	950	1877.00	1924.00	1250	......	...	....	....
BC65	685	1364.00	1411.00	......	......	1025	2160.00	2208.00	1400	......	...	....	....
BC65	855	1506.00	1553.00	......	......	1200	2664.00	2712.00	1650	717.00	1025	1411.00	1325
BC70	570	1426.00	1474.00	......	......	1000	2144.00	2191.00	1350	......	....	....	....
BC70	685	1630.00	1681.00	......	......	1250	2617.00	2672.00	1600	......	....	....	....
BC70	855	1873.00	1923.00	......	......	1450	2917.00	2854.00	1800	789.00	1200	1630.00	1600

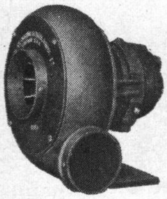
Speed, Capacity and Brake HP at Various Pressures for 60 Cy. and DC—Direct Connected

		Static pressure, inches																	
		¼		½		¾		1		1¼		1½		1¾		2		2½		3	
Size, Nos.	RPM	CFM	HP	CFM	HP	CFM	HP	CFM	HP	CFM	HP	CFM	HP	CFM	HP	CFM	HP	CFM	HP	CFM	HP
BC25	1140	1170	.13	950	.13	520	.09	....	...	....	...	....	...	...	...	....	....	....	....	....	....
BC25	1750	1960	.44	1830	.45	1720	.45	1570	.45	1400	.44	1190	.41	800	.32	....	....	....	....	....	....
BC30	1140	2200	.31	1920	.31	1620	.31	1240	.29	....	...	....	...	...	...	....	....	....	....	....	....
BC30	1750	3600	1.12	3430	1.12	3250	1.12	3070	1.12	2880	1.12	2700	1.11	2500	1.11	2290	1.09	1660	1.01	....	....
BC35	855	2350	.30	1950	.30	1500	.25	....	...	....	...	....	...	....	....	....	....	....	....	....	....
BC35	1140	3400	.60	3100	.60	2800	.60	2475	.60	2150	.60	1750	.58	....	....	....	....	....	....	....	....
BC35	1750	5470	2.22	5300	2.22	5100	2.22	4900	2.22	4700	2.22	4500	2.22	4300	2.22	4080	2.22	3650	2.22	3225	2.22
BC40	855	3750	.55	3280	.55	2800	.55	2250	.55	1300	.45	....	....	....	....	....	....	....	....	....	....
BC40	1140	5300	1.25	4950	1.25	4600	1.25	4240	1.25	3850	1.25	3480	1.25	3100	1.25	2625	1.24	....	....	....	....
BC40	1750	8375	4.52	8160	4.52	7950	4.52	7720	4.52	7500	4.52	7260	4.52	7050	4.52	6800	4.52	6350	4.52	5850	4.52
BC45	685	4220	.50	3600	.50	2850	.50	1800	.46	....	....	....	....	....	....	....	....	....	....	....	....
BC45	855	5570	.98	5050	.98	4500	.98	3950	.98	3400	.98	2500	.92	....	....	....	....	....	....	....	....
BC45	1140	7700	2.31	7300	2.31	6900	2.31	6500	2.31	6100	2.31	5660	2.31	5250	2.31	4850	2.31	3900	2.31	....	....
BC50	685	6050	.85	5300	.85	4500	.85	3750	.85	2000	.70	....	....	....	....	....	....	....	....	....	....
BC50	855	7850	1.65	7250	1.65	6660	1.65	6100	1.65	5450	1.65	4850	1.65	4050	1.65	....	....	....	....	....	....
BC50	1140	10780	3.93	10350	3.93	9890	3.93	9450	3.93	9000	3.93	8500	3.93	8070	3.93	7600	3.93	6700	3.93	5650	3.93
BC55	570	6600	.82	5600	.82	4580	.82	3300	.82	....	....	....	....	....	....	....	....	....	....	....	....
BC55	685	8300	1.42	7500	1.42	6650	1.42	5800	1.42	4900	1.42	3600	1.32	....	....	....	....	....	....	....	....
BC55	855	10700	2.77	10000	2.77	9370	2.77	8700	2.77	8010	2.77	7350	2.77	6690	2.77	6000	2.77	....	....	....	....
BC60	570	8900	1.27	7750	1.27	6600	1.27	5500	1.27	3800	1.15	....	....	....	....	....	....	....	....	....	....
BC60	685	11020	2.22	10100	2.22	9200	2.22	8250	2.22	7300	2.22	6400	2.22	5100	2.10	....	....	....	....	....	....
BC60	855	14200	4.30	13500	4.30	12750	4.30	12000	4.30	11250	4.30	10500	4.30	9750	4.30	9000	4.30	7400	4.30	....	....
BC65	570	12550	2.6	11500	2.55	10300	2.50	9000	2.4	7750	2.25	5000	1.90	....	....	....	....	....	....	....	....
BC65	685	15400	4.4	14500	4.4	13600	4.4	12600	4.35	11550	4.25	10200	4.15	9250	4.00	7700	3.75	....	....	....	....
BC65	855	19700	8.75	18950	8.7	18200	8.65	17450	8.6	16650	8.55	15900	8.50	15150	8.40	14350	8.30	12600	8.05	10350	7.60
BC70	570	14700	2.85	13400	2.85	12200	2.85	10800	2.85	9500	2.85	8150	2.85	5500	2.50	....	....	....	....	....	....
BC70	685	18150	4.85	17100	4.85	16000	4.85	14900	4.85	13800	4.85	12800	4.85	11700	4.85	10600	4.85	6500	4.20	....	....
BC70	855	23180	9.55	22250	9.55	21400	9.55	20500	9.55	19650	9.55	18800	9.51	75950	9.55	17100	9.55	15300	9.55	13600	9.55

BLOWERS

ILG VOLUME, CENTRIFUGAL

Direct Connected



Is applicable for exhausting dust and fumes from laboratories and polishing rooms, removal of steam and heavy vapors from cooking vats in dye houses, breweries, canning factories, etc.

The discharge can be changed to 4 different positions, making it possible to install the blower from different angles. Cast housing and fan wheel resist corrosion.

			Alternating Current			
			60 cycle, 1 phase, Constant Speed		2 or 3 phase,	
Size, Nos.	RPM	HP	110V, each	220V, each	220 or 440V	Wt. each, lbs.
7½P	3400	⅛	$108.00	$108.00	$130.00	56
10P	1750	1/10	123.00	123.00	132.00	78
10P	3400	⅓	144.00	144.00	153.00	85
15P	1750	⅙	157.00	157.00	226.00	100
15P	3400	1	306.00	306.00	265.00	125
15P	3400	1½	338.00	338.00	300.00	140
20P	1750	¾	408.00	408.00	353.00	250

Note—Prices for Direct Current on Request.

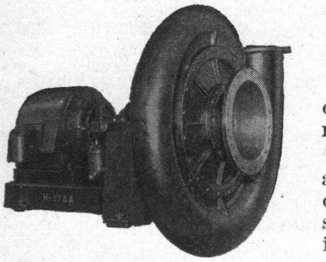
Performance Table

		Static Pressure, in.					
		¼		½		¾	
Size, Nos.	RPM	CFM	Watts input	CFM	Watts input	CFM	Watts input
7½P	3400	250	190	235	190	225	185
10P	1750	208	150	184	149	156	148
15P	1750	415	230	375	215	330	200
20P	1750	1180	820	1130	780	1085	765

	Static Pressure, in.							
	1		1½		2		3	
Size, Nos.	CFM	Watts input	CFM	Watts input	CFM	Watts input	CFM	Watts input
7½P	215	180	190	175	165	170	80	150
10P	118	146	0	0	...	...	..	...
15P	280	190	150	165	0	...	..	...
20P	1040	740	945	685	845	635	600	510

BLOWERS AND EXHAUSTERS

ROOTS-CONNERSVILLE CENTRIFUGAL



Type OIB

Single Stage

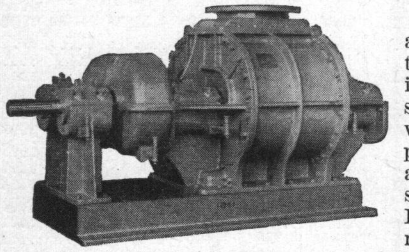
Designed to obtain high efficiency with quiet operation and sturdy running characteristics.

Built in two types both of which are furnished with single inlet and overhung impeller. In type OIB, shown, the impeller is mounted on its own shaft: in type OI, the impeller is mounted on the extended motor shaft.

Available in a wide range of sizes and capacities for all conditions.

Complete Information and Prices on Request

ROOTS-CONNERSVILLE ROTARY POSITIVE DISPLACEMENT



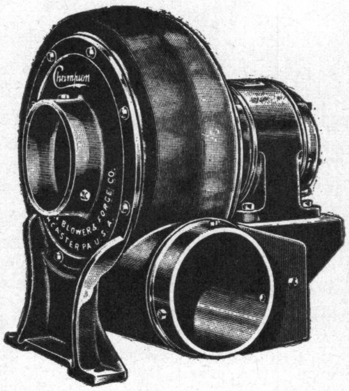
The outstanding performance of these blowers is continually being demonstrated in steel plants, mines and smelters, refineries and gas works, food and chemical plants, waterworks and sewage disposal plants. They scavange and supercharge Diesel engines, ventilate mine borings and tunnels, provide air for large-scale engine and carburetor tests.

Available in a wide range of sizes up to 50,000 cu. ft. per minute, and for pressures up to 10 lbs. gauge in standard construction. Larger capacities built to order.

Complete Specifications and Prices on Request

BLOWERS AND EXHAUSTERS

CHAMPION UNIVERSAL TYPE BE, ELECTRIC-DRIVEN



Can be used as an exhaust fan or a volume blower. Has a motor bed plate so arranged it is adjustable to take the proper center distances of various style motors.

Can be furnished complete with motor, or less motor, ready to attach any make of motor, if so desired.

Fan No.	110V AC or 220V, SP, each	3 Phase, each	115V or 230V DC, each	RPM	HP	Wt. each, lbs.
1BE	$ 86.00	$105.00	$ 127.00	1750	¼	95
1BE	124.00	124.00	154.00	3450	½	110
2BE	107.00	130.00	156.00	1750	⅓	173
2BE	270.00	218.00	338.00	3450	2	195
3BE	158.00	154.00	170.00	1140	⅛	200
3BE	160.00	153.00	184.00	1750	½	210
3BE	365.00	267.00	467.00	3450	3	290
4BE	200.00	200.00	222.00	1140	½	275
4BE	242.00	215.00	351.00	1750	1	285
4BE	556.00	296.00	662.00	3450	7½	375
5BE	375.00	263.00	338.00	860	½	340
5BE	306.00	240.00	365.00	1140	¾	460
5BE	354.00	277.00	365.00	1750	2	510
6BE	395.00	316.00	391.00	860	¾	375
6BE	387.00	290.00	380.00	1140	1	410
6BE	440.00	356.00	619.00	1750	3	525
7BE	647.00	472.00	686.00	860	2	625
7BE	677.00	428.00	794.00	1140	5	675
7BE	......	478.00	780.00	1750	10	725
8BE	1080.00	610.00	1026.00	860	5	1065
8BE	980.00	598.00	1032.00	1140	7½	1150

Capacities, Speeds and Horsepower

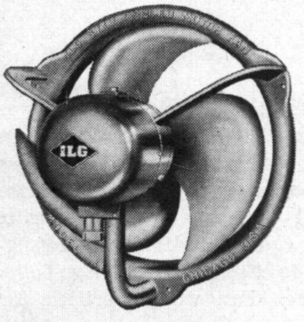
	1" SP .58 Oz.			2" SP 1.16 Oz.			3" SP 1.73 Oz.		
No.	CFM	RPM	HP	CFM	RPM	HP	CFM	RPM	HP
1B	185	1760	.06	260	2490	.15	320	3060	.25
2B	280	1410	.08	402	1990	.24	490	2470	.38
3B	480	1090	.15	660	1535	.34	820	1880	.65
4B	600	920	.17	800	1310	.46	1000	1610	.88
5B	740	860	.22	1000	1230	.58	1250	1500	1.05
6B	910	780	.25	1285	1110	.65	1580	1360	1.25
7B	1330	640	.35	1880	910	1.00	2295	1120	1.78
8B	2240	500	.68	3180	710	1.70	3890	870	3.00

	4" SP 2.31 Oz.			5" SP 2.89 Oz.			6" SP 3.47 Oz.		
No.	CFM	RPM	HP	CFM	RPM	HP	CFM	RPM	HP
1B	360	3540	.38	400	3930	.52	...	....	....
2B	570	2820	.60	620	3160	.90	690	3460	1.10
3B	940	2170	1.00	1050	2430	1.40	1175	2670	1.78
4B	1200	1850	1.20	1300	2070	1.85	1400	2270	2.35
5B	1460	1750	1.58	1650	1980	2.20	1750	2090	2.80
6B	1820	1575	1.85	2038	1750	2.60	2230	1920	3.30
7B	2650	1295	2.70	2970	1450	3.80	3250	1590	4.95
8B	4490	1020	4.55	5030	1120	6.40	5496	1225	8.20

	7" SP 4.05 Oz.			8" SP 4.62 Oz.			9" SP 5.19 Oz.		
No.	CFM	RPM	HP	CFM	RPM	HP	CFM	RPM	HP
2B	748	3730	1.32	795	3990	1.65	....	....	....
3B	1250	2870	2.25	1340	3070	2.75	1410	3250	3.30
4B	1550	2450	3.05	1700	2620	3.86	1800	2780	4.50
5B	1900	2260	3.65	2100	2420	4.60	2200	2560	5.30
6B	2400	2070	4.25	2560	2220	5.20	2750	2350	6.20
7B	3495	1715	6.25	3740	1830	7.80	3990	1940	9.10
8B	5900	1325	10.80	6310	1415	12.98	6740	1500	15.30

INDUSTRIAL PROPELLER FANS

ILG



Type "Q"
Sizes 63 to 303 (6 in. through 30 in. diam. fan wheels), in capacities from 250 to 7800 CFM.

Self-Cooled Motor

This exclusive construction affords the low operating cost of the open motor with the protection of the enclosed motor. The ILG self-cooled motor is an open motor, protected and enclosed by a metal hood. The fan action draws clean air through the vent pipe in the bottom of the fan from the outside, circulates it through the motor and exhausts it. The motor stays cool and clean.

Balanced Fan Wheel

Fan wheels are dynamically balanced to assure freedom from vibration, quiet operation and long bearing life.

Bearings

The smaller fans are fitted with wool packed bearings. On 16 in. and larger sizes ball bearings are used.

Frame

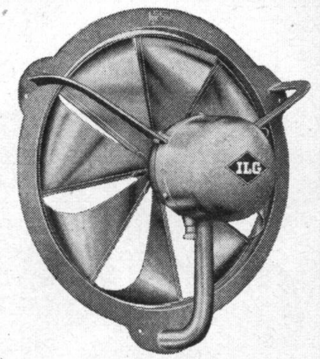
Frame is made of cast iron, aluminum or steel, rugged and solid.

Complete Testing

Each fan tested on the active current and voltage for which it was built.

Finish

Attractively finished in ILG green, attractive and durable.



Type "W"
Sizes 54 to 72 in., capacities from 23,200 to 40,500 CFM.

Type Q—Alternating Current, Constant Speed, One Phase, 60 Cycles, 115 or 230 Volts

Size, Nos.	RPM	CFM	Nominal wheel diam., in.	Motor, HP	Decibel rating	Shipping wt., lbs.
63SH	2750	250	6	1/50	50	7
83SH	1550	350	8	1/125	47	8
103SH	1550	500	10	1/75	46	12
123SH	1550	1000	12	1/20	54	19
163SH	1140	1700	16	1/16	53	38
183SH	1140	2600	18	1/8	56	69
213SH	1140	3600	21	1/5	58	91
243SH	855	4700	24	1/4	54	150
303SH	685	7800	30	3/8	61	235
363SH	570	11,000	36	5/8	62	317
423SH	490	15,500	42	7/8	61	495
483SH	490	23,300	48	1½	65	585

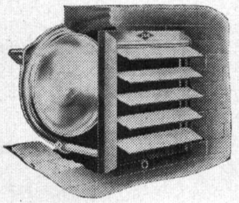
Type Q—Alternating Current, Two Speed, One Phase, 60 Cycles, 115 or 220 Volts

Size, Nos.	RPM	CFM	Nominal wheel diam., in.	Motor, HP	Decibel rating	Shipping wt., lbs.
163S	1140	1700	16	1/16	53	39
163S	855	1280	16	1/16	48	39
183S	1140	2600	18	⅛	56	80
183S	855	1950	18	⅛	47	80
213S	1140	3600	21	⅕	58	93
213S	855	2700	21	⅕	50	93
243S	855	4700	24	¼	54	165
243S	600	3300	24	¼	48	165
303S	685	7800	30	⅜	61	245
303S	500	5700	30	⅜	51	245
363S	570	11,000	36	⅝	62	317
363S	400	7550	36	⅝	56	317
423S	490	15,500	42	⅞	61	495
423S	380	12,000	42	⅞	61	495

Fans are equipped with two speed switch, having high, low and off positions. Low speeds are approximate.

PROPELLER FAN SHUTTERS

ILG AUTOMATIC



Protects the fan and interior of the building against rain and snow. Prevents wind pressure against the fan from overloading the motor.

Shutter held open by force of air current when fan is running. When fan is shut off, shutter closes automatically by gravity.

Aluminum blades, pressed on copper coated rods supported in cast iron frame. Felted blade edges.

Nos.	Shutter size, in.	For fan, in.	Frame, in. square outside	Frame, in. square inside	Projection, in. closed	Projection, in. open	Wt. each, lbs.
638	8	8	10	8⅛	1⅝	3¾	3
639	10	10	12	10⅛	1⅝	4⅜	3
640	12	12	14¼	12⅜	2¾	6¼	5
641	16	16	18¼	16⅜	2¾	5⅞	8
642	18	18	21⅞	19	2⅝	5⅝	18
643	21	21	25¼	22¼	2¾	6¼	20
644	24	24	28¼	25	2 9/16	6	30
645	30	30	33½	30	2 7/16	5⅝	50
646	36	36	41¾	38	2¾	6	78
647	42	42	48	44	3	6¾	120
648	48	48	54⅛	49⅝	2¼	7	155
649	54	54	60⅝	56⅛	2¼	7¼	230
650	60	60	66⅝	62⅛	2¼	7¼	285
651	72	72	79⅛	74⅝	3¼	7¼	375

Alternating Current, Constant Speed, Three Phase, 60 Cycle, 220/440 or 550 Volts

Size, Nos.	Type	RPM	CFM	Nominal wheel diam., in.	Motor, HP	Decibel rating	Shipping wt., lbs.
183M	Q	1140	2600	18	⅛	56	80
213M	Q	1140	3600	21	⅕	58	93
243M	Q	855	4700	24	¼	54	165
303M	Q	685	7800	30	⅜	61	245
363M	Q	570	11,000	36	⅝	62	305
423M	Q	490	15,500	42	⅞	61	495
483M	Q	490	23,300	48	1½	65	585
54M	W	425	23,200	54	2	83	765
60M	W	380	28,400	60	2½	74	1150
72M	W	315	40,500	72	3	73	1600

Type P—High Speed, Alternating Current, One Phase, 60 Cycle, 115 or 230 Volts

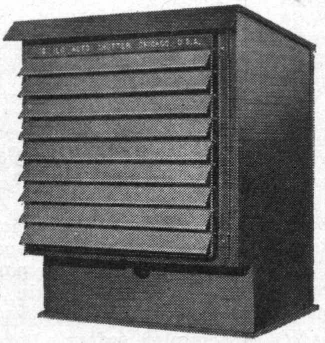
Size, Nos.	RPM	Nominal wheel diam., in.	Motor, HP	Decibel rating	Shipping wt., lbs.
163PS	1750	16	⅓	63	60
183PS	1750	18	½	69	90
213PS	1750	21	⅝	65	143
243PS	1140	24	¾	64	163
* 30HS	1140	30	¾	75	285

Size, Nos.	CFM at Static Pressure, in. 0	10	20	30	40	50	60
163PS	2580	2380	2170	1970	1810	1710	1570
183PS	3670	3500	3340	3160	2990	2600	2300
213PS	4800	4600	4400	4200	3950	3750	3500
243PS	6200	5750	5300	4850	4400	3900	3400
* 30HS	10,000	9500	9000	8400	7700	6900	6000

*Type "H" with 4-blade cast aluminum wheel.

PENT HOUSES

ILG



For Power Roof Ventilator

Used in combination with an ILG Self-Cooled Motor Propeller Fan. An ILG automatic shutter is standard equipment.

Solidly constructed of rust-resisting steel. Thoroughly weather-tight in every respect.

Door in back of penthouse permits easy access to fan; can be locked.

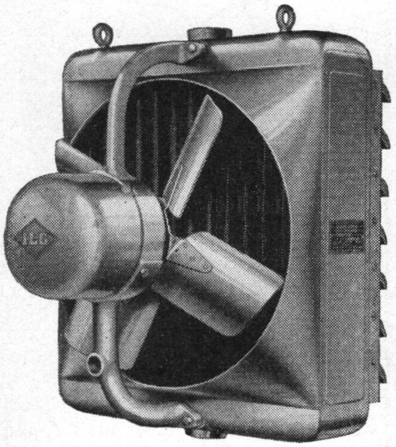
Available with or without insulated lining.

Size, Nos.	For fan, in.	Metal ga., No.	Height, in.	Bottom inside, in.	Wt. each, lbs.
103	10	20	19	14 x12	80
123	12	20	22	16 x14	100
163	16	20	28	21 x16	115
183	18	18	32	24 x18	160
213	21	18	36	27 x20	170
243	24	18	41	31 x22	215
303	30	18	50	39 x26	300
363	36	18	60	48 x30	400
423	42	18	66	57 x35	580
483	48	18	72	66 x40	860
54"	54	16	82	62½x39½	1000

All Above Prices on Request

UNIT HEATERS

ILG STEAM OR HOT WATER



Exclusive ILG Self-Cooled Motor never "slow roasts" due to radiated heat from core, saves power cost. Two-piece graduated header provides "balanced" steam distribution . . . each tube expands and contracts uniformly. Top of header bolted on, simplying maintenance. Brass orifice bushings expand tubes uniformly in header plate. Solid copper core-fins pressed into ½ in. OD round copper tubes. Bottom header "floats" on slotted coil retainer and spring washers for expansion and contraction of coil independent of unit casing. Individually adjustable louvers lessen air turbulence and increase heating range up to 40 to 80 feet. Eye-bolts, connected directly to header, remove all weight from supply line. Fan wheel verified for dynamic balance at rated speeds.

Can be operated manually, by electric thermostat, or steam regulator.

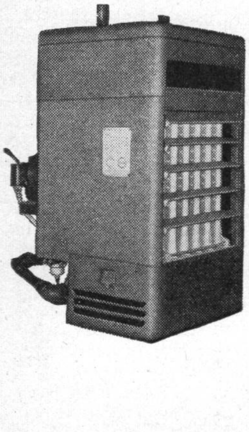
Unit heater prices include fan, motor, casing, individually adjusted air deflectors, and heating element. Speed regulator is included where specifically stated. No air valves or other accessories are included.

Ratings based on 60° F. entering air, 2 lbs. steam.

Size and Type			Alternating Current			RPM	Btu	Final temp.	CFM	HP	EDR	Cond.	Decibels	Wt. each, lbs.
Horizontal	Vertical	Low Ceiling	1 Phase, 110 or 220 Volts, 60 Cycle		2 or 3 Phase, 220 or 440 Volts,									
			Constant Speed, each	Two Speed, each	Constant Speed, each									
10-1S6	......	......	$ 62.00	$......	$......	1550	18,600	111	385	1/75	77	18	50	77
10-S6	......	......	89.00	......	......	1550	28,400	134	385	1/75	118	30	50	78
13G6	**V13G6**	**S13G6**	100.00	108.00	......	1140	40,000	134	500	1/60	167	42	53	115
13G6	**V13G6**	**S13G6**	100.00	108.00	......	855	34,000	144	375	1/60	142	36	47	115
13D6	**V13D6**	**S13D6**	110.00	122.00	......	1140	50,500	132	650	1/60	210	53	54	130
13D6	**V13D6**	**S13D6**	110.00	122.00	......	855	42,500	140	490	1/60	177	44	48	130
13E6	**V13E6**	**S13E6**	119.00	132.00	......	1140	68,300	128	930	1/16	285	71	56	133
13E6	**V13E6**	**S13E6**	119.00	132.00	......	855	53,900	131	700	1/16	224	56	50	133
13H6	**V13H6**	**S13H6**	126.00	141.00	......	1140	77,900	125	1100	1/16	324	81	62	124
13H6	**V13H6**	**S13H6**	126.00	141.00	......	855	61,500	129	820	1/16	256	64	56	124
13F6	**V13F6**	**S13F6**	135.00	150.00	......	1750	90,500	118	1430	1/7	377	94	68	135
13F6	**V13F6**	**S13F6**	135.00	150.00	......	1140	68,300	128	930	1/7	285	71	58	135
17D6	**V17D6**	**S17D6**	135.00	149.00	143.00	1140	91,000	130	1200	1/16	379	95	62	170
17D6	**V17D6**	**S17D6**	135.00	149.00	143.00	855	73,500	135	900	1/16	306	77	56	170
17T6	**V17T6**	**S17T6**	141.00	157.00	147.00	1140	106,000	126	1480	1/6	442	111	67	166
17T6	**V17T6**	**S17T6**	141.00	157.00	147.00	855	85,200	131	1100	1/6	355	89	61	166
17H6	**V17H6**	**S17H6**	147.00	163.00	153.00	1140	128,000	120	1980	1/6	533	133	67	190
17H6	**V17H6**	**S17H6**	147.00	163.00	153.00	855	106,000	126	1480	1/6	442	111	61	190
17F6	**V17F6**	**S17F6**	154.00	172.00	157.00	1750	144,000	108	2750	1/3	600	150	73	188
17F6	**V17F6**	**S17F6**	154.00	172.00	157.00	1140	121,000	122	1790	1/3	505	127	63	188
19D6	**V19D6**	**S19D6**	154.00	171.00	157.00	1140	151,000	123	2200	1/6	629	157	65	220
19D6	**V19D6**	**S19D6**	154.00	171.00	157.00	855	115,000	124	1650	1/6	479	120	59	220
19E6	**V19E6**	**S19E6**	163.00	180.00	166.00	1140	171,500	120	2640	1/6	715	179	66	220
19E6	**V19E6**	**S19E6**	163.00	180.00	166.00	855	145,000	124	2090	1/6	604	151	60	220
19H6	**V19H6**	**S19H6**	184.00	199.00	184.00	1140	195,000	115	3300	1/3	813	203	70	230
19H6	**V19H6**	**S19H6**	184.00	199.00	184.00	855	164,000	121	2470	1/3	684	171	64	230
19F6	**V19F6**	**S19F6**	208.00	224.00	208.00	1750	213,000	105	4400	5/8	888	222	78	300
19F6	**V19F6**	**S19F6**	208.00	224.00	208.00	1140	180,000	118	2860	5/8	830	198	61	300
25D6	**V25D6**	**S25D6**	230.00	248.00	214.00	855	229,000	126	3190	1/4	954	239	70	450
25D6	**V25D6**	**S25D6**	230.00	248.00	214.00	685	195,400	131	2540	1/4	814	204	63	450
25E6	**V25E6**	**S25E6**	266.00	287.00	248.00	855	268,200	121	4080	1/4	1118	280	70	440
25E6	**V25E6**	**S25E6**	266.00	287.00	248.00	685	231,500	126	3250	1/4	965	241	63	440
25F6	**V25F6**	**S25F6**	273.00	304.00	273.00	1140	286,000	117	4670	3/8	1191	298	73	490
25F6	**V25F6**	**S25F6**	273.00	304.00	273.00	855	245,000	125	3500	3/8	1020	256	65	490

ILG GAS-FIRED

Series "C"—For Natural Gas



The heat exchanger and combustion chamber of ILG gas-fired unit heaters are gray iron cast together in one piece. Extended heating surface fins on the heat exchanger are cast integral. Burners are constructed of gray iron with drilled ports. Each tube of the heat exchanger has a separate burner head permitting the flame to burn within the tube without impingement on the metal.

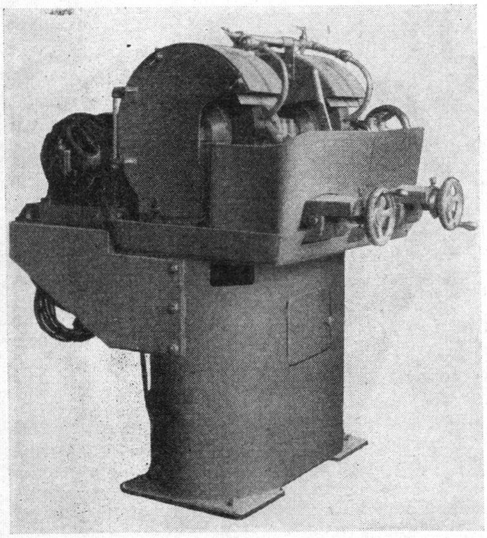
Standard features include non-corrosive metal draft hood with built-in down draft divertor; magnetic gas valve; thermocoupled safety pilot; gas cock; automatic limit control; quiet operating four blade fan; individually adjustable louvers.

Nos.	Each	Input, Btu per hr.	Output, Btu per hr.	Sq. ft., EDR	Air del., CFM	Motor, HP	Speed, RPM	Wt. each, lbs.
215C	$400.00	215,000	172,000	716	3500	1/4	1140	525
175C	365.00	175,000	140,000	580	2900	1/4	1140	475
160C	345.00	160,000	128,000	553	2600	1/8	860	450
140C	295.00	140,000	112,000	465	2320	1/12	860	400
110C	245.00	110,000	88,000	365	1820	1/20	860	350
85C	205.00	85,000	68,000	280	1350	1/40	1000	300

Electric Unit Heaters are available. Complete information and prices on request.

ROCK BIT GRINDERS

MASSCO MODEL 38



The Massco Rock Bit Grinder is a heavy duty production tool built to give greater efficiency and more speed for resharpening all types and styles of detachable rock bits. Superior performance, faster resharpening speed and lower rock bit sharpening costs are outstanding features proven through actual service. Rugged construction insures long life with a minimum of maintenance expense.

The 18 in. grinding wheels, one single bevel face for gauge grinding and the other a double bevel for face grinding are 22 inches apart, so two operators can work side by side; one to gauge the bits while the second grinds the faces. All grinding is done in plain view of the operator.

Specially designed holders permit a quick change of bits and a screw feed adjustment enables the operator to produce reground bits of the same accuracy as new ones. The Model 38 Grinder includes a rotating head for grinding all clearances on the bit gauge without altering the wheel face. Coolant is added above and below the bit to prevent burning when grinding the cutting edges. Automatic indexing of the bit and built-in wheel dressers are furnished. Splash guards are provided at all necessary points to protect the operator and prevent waste of coolant medium.

The Massco Grinder is available in different combinations to meet various operating conditions. The general principle of grinding and gauging bits is the same on all models. The below table lists the various models of our 38 grinder.

See page 224 for listing of bit grinding wheels.

Specifications

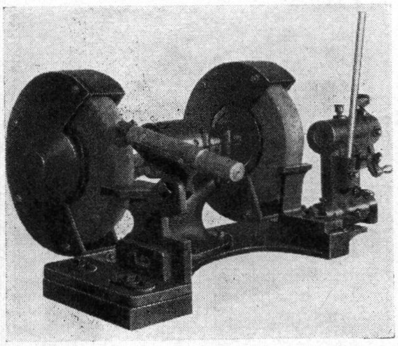
Type	38 TVM	38 BVM	38 BPM	38 TP	38 BP
Mounting	Steel tank	Bench	Bench	Steel tank	Bench
Drive	V-belt & motor	V-belt & motor	Flat belt & motor	Flat belt	Flat belt
Size spindle pulley, in.	x x x	x x x	x x x	7x5	7x5
Recommended spindle RPM	1100-1150	1100-1150	1100-1150	1100-1150	1100-1150
*V-Belt drive					
Sheave diameter, in.	8½	8½	x x x	x x x	x x x
Belt No. and size	2-B60	2-B60	x x x	x x x	x x x
Centers, in.	19½	19½	x x x	x x x	x x x
Size pump pulley, in.	x x x	x x x	x x x	4x1¼	x x x
Recommended pump RPM	1300-1400	1300-1400	1300-1400	1300-1400	x x x
HP required	5	5	5	5	5
Spindle bearings	Timken	Timken	Timken	Timken	Timken
Diameter wheels, in.	18	18	18	18	18
Bit cooling system	Built-in pump & filter	Distrib. piping only	Distrib. piping only	Built-in pump & filter	Distrib. piping only
Capacity coolant tank, gal.	16	x x x	x x x	16	x x x
Height, base to spindle, in.	44	15	15	44	15
Floor or bench space, in.	48x60	48x40	48x40	48x40	48x40
Height over all, in.	60	30	30	60	30
Shipping weight, lbs.	2300	1750	1725	1950	1450

*For 1750 RPM 60-cycle motor only. Can be made for 25 or 50-cycle speeds.

Prices on Request

ROCK BIT GRINDERS

MASSCO JUNIOR



The Massco Junior Rock Bit Grinder has been designed for the user of a limited number of detachable rock bits. It is priced within the reach of all operators and makes possible further economies for its user. Bits can be kept sharpened for top efficiency in your own shop. In terms of economy this means more footage drilled with less air consumption.

The complete Massco Junior Rock Bit Grinder includes bit grinding attachments, grinder head and Norton Grinding Wheels, all mounted on a cast iron base. The entire unit is built in compliance with the American Engineers' Standard Safety Code and fully protects the operator in case of wheel breakage.

A bit holder is furnished, threaded for one size and type of bit. Additional holders are available if more than one type of bit is used. Adjusting screws are provided for positioning the bit when grinding the gauge to the desired clearance angle and size and to provide the right angle of contact of the cutting edges against the wheel.

The Massco Junior is furnished as a complete unit or as attachments to fit on any bench or pedestal grinder. These attachments are easily installed in front of the wheels on the bench or on a base plate. Slotted holes provide ample adjustment on the castings for alignment and ease of installation.

See page 224 for listing of bit grinding wheels.

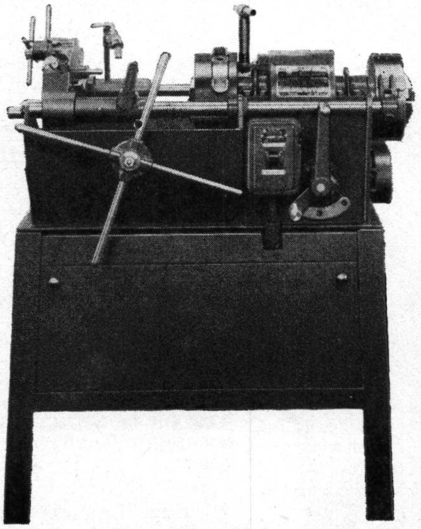
2 HP, 12 in. Diameter Wheel, Wheel Speed 5500 Feet Per Minute

Model	Pulley or sheave, in.	Dimensions, in. L	W	H	Wt. each, lbs.
Flat belt	4¼x3½	36	20	15	300
V belt with motor	4.4	36	34	15	525

Prices on Request

ROCK DRILL ROD MACHINES

TOLEDO



220 or 440 Volt, 3 Phase, 60 Cycles

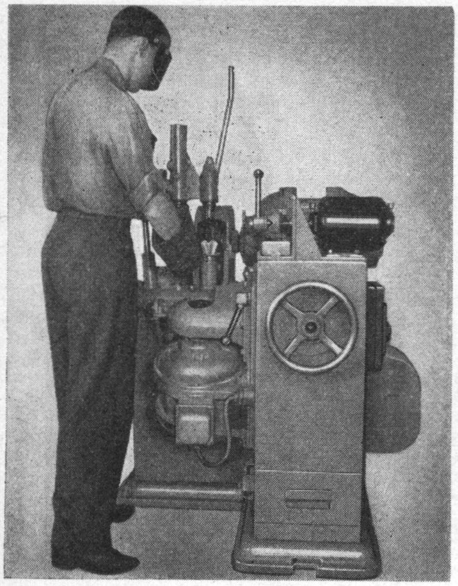
	Each
Toledo Rock Drill Rod Machine — Complete with 1½ HP motor but less all dies, tools, etc.; wt. 1150 lbs.	$1400.00
Die Heads and Dies, per size	20.00
Stops	5.00
Box Tool Complete per size	30.00
Box Tool Holder	10.00
Reaming Tool—For box tool	4.00
Adjustable Rod Support	15.00
	Per set
Forming Tools—4 per set	$ 5.00
Dies—6 per set	14.00
Cutters—For box tool, 4 per set	16.00

Speeds in Feet Per Minute

	Threading			Turning		
	Low	Med.	High	Low	Med.	High
Diam. rod, in.	40.2 RPM	60.82 RPM	100.36 RPM	82.00 RPM	124.08 RPM	204.74 RPM
⅞	9.2	13.9	23.0	18.8	28.4	46.7
1	10.5	15.9	26.2	21.5	32.4	53.4
1⅛	11.8	17.8	29.6	24.2	36.5	60.0
1¼	13.1	19.8	32.8	26.8	40.6	66.7
1⅜	14.4	21.9	36.1	29.5	44.6	73.4
1½	15.8	23.9	39.4	32.2	48.6	80.0
1⅝	17.1	25.9	42.7	34.9	52.7	86.8
1¾	18.4	27.8	46.0	37.6	56.8	93.5

HOT MILLERS

MASSCO McCARTHY



For Removable Rock Bit Reconditioning

Hot-milling performs the function of redressing the flutes and gauge of rock bits at a forging temperature. The Massco-McCarthy Hot Miller has been designed to provide such a unit that is dependable, rapid, efficient and simple to operate.

The Hot Miller consists essentially of motor driven rotary milling cutters mounted on a main frame or base. Guides and stops confine the bit to the desired position in relation to the cutter. Bits are milled in two main operations bringing the bit wings to sharpness and gauging to the desired diameter.

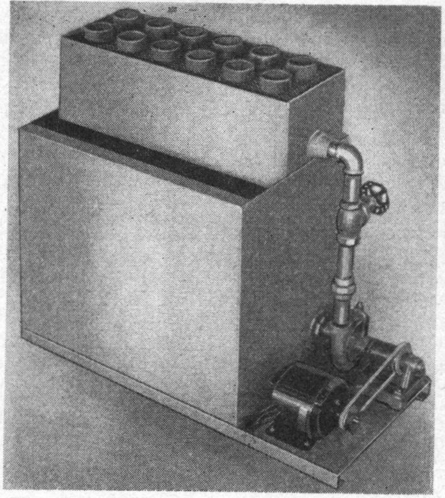
Hot-milling provides high capacity, low sharpening costs and results in improved drilling efficiency.

Write for bulletin describing 20 additional distinctive designed features incorporated in this unit.

Prices on Request

ROCK BIT QUENCHING UNITS

MASSCO



The Massco Twelve-Cup Rock Drill Bit Quenching Unit is an inexpensive, highly efficient, self contained unit producing uniformly hardened bits in large quantities.

A 100 gallon steel water tank is furnished with over-flow outlet and drain plug. Water is circulated by V-belt driven centrifugal pump. Pump and tank are mounted on a steel frame to maintain perfect alignment.

Twelve cast-iron quenching cups each have brass screen inserts upon which bits are set insuring uniform depth of hardness. The cups are fed by an oversize header providing equal amounts of water to each cup. A valve allows regulation of water depth. This entire unit is mounted in a splash proof housing on top of the water tank.

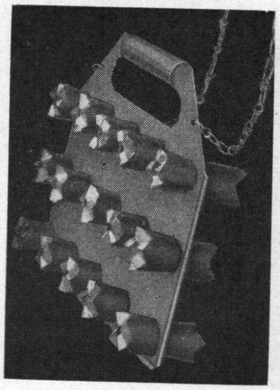
A cold water temperature control valve can be furnished if desired.

Height, in.	41
Floor space, in.	24x50
Wt. each, lbs.	440

Prices on Request

ROCK BIT CARRIERS

MASSCO



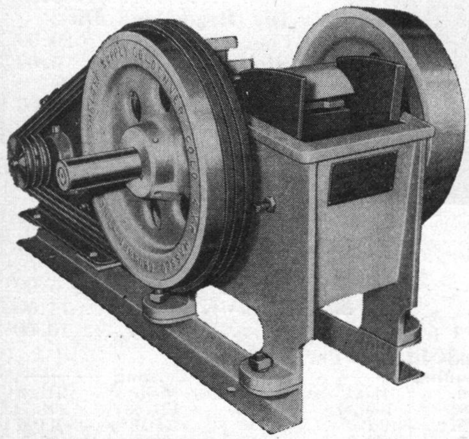
This carrier provides the operator with an easy and accurate method of preventing loss of bits and provides an orderly arrangement of the various sizes. Whenever a bit is used too long, drilling is slowed up and the company pays for non-productive time, wasted steel and wasted air. When bits are strung on wires an accurate check of each drillers' work is impossible. The savings in increased drilling efficiency alone are enough to absorb the small cost of one Massco Rock Bit Carrier per man.

These carriers are made of plate steel with beaded edges to give ample stiffness without extra weight. The rounded handle is easy to grip and each carrier has a light steel chain sling for carrying into stopes. Fastening devices are die-stamped steel, simple in design but positive in action.

For bits, types	Each	No. of bits	Wt. each, lbs.
Timken "B", "H" or "M"	$6.60	30	4
Timken "B", "H" or "M"	8.47	40	6
Timken "D"	7.50	30	6
Ingersoll-Rand No. 1	7.50	30	6

LABORATORY CRUSHERS

MASSCO HI-CAPACITY



This crusher is designed to speed up the crushing of ore samples in laboratories or to act as a high capacity crusher in small pilot plants. The movable jaw hits two blows during each revolution thereby reducing oversize material to a minimum. A combination of forward and downward stroke, coupled with a rocking action, exerts pressure on the coarse material yet permits finished material to pass down through the jaws. This feature is particularly advantageous on damp ores providing greater capacity over units with a conventional stroke.

The frame is of all welded plate steel having considerably higher strength than cast steel or iron frames. Jaw and cheek plates are of Manganese steel; reversible and interchangeable for long life. Other design features consist of alloy steel swinging jaw and eccentric shaft, Pear-O-Bronze bearing bushings, Alemite lubrication, and fabricated steel base for mounting crusher and motor as a single unit. Handwheel adjustment allows jaw opening to be altered for size of product. V-belt or flat belt (15x3¼ in. pulley) drive available.

3 HP; 4x6 in. Jaw Opening

Capacity 1000 to 2000 lbs. per hour (dry limestone)
44 in. long, 21 in. wide, 23 in. high (with motor and base)

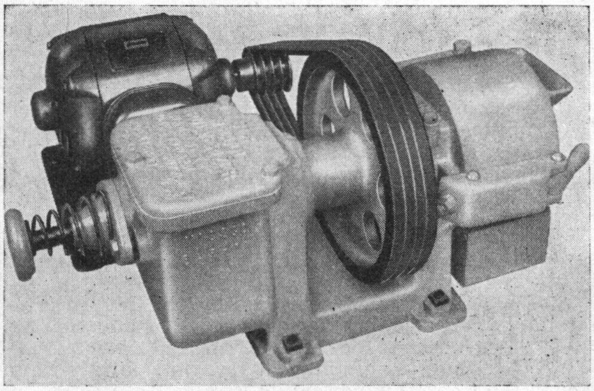
	*V-Drive		†Flat Belt		
Model	Each	Wt. each, lbs.	Each	Wt. each, lbs.	Product range, in.
Standard	$527.00	745	$365.00	540	¼ to ¾
Special	527.00	745	365.00	540	⅞ to 1½

*V-Drive with motor and starter.
†Flat Belt with T & L pulleys, without motor.

	Each
Stationary Jaw Plate—Manganese steel	$ 9.10
Movable Jaw Plate—Manganese steel	10.20
Cheek Plates—Manganese steel, 2 required	3.60

PULVERIZERS

McCOOL



The McCool Pulverizer is simple, efficient, durable, economical and amazingly rapid. It is widely adapted for assay offices, metallurgical, chemical and industrial laboratories.

This unit is a self-contained laboratory grinder designed for reducing virtually any material and will produce a fine mesh sample in one operation. It is provided with a rotating disc having a planetary movement in a vertical plane assuring proper angular curvature with relation to the stationary disc. Discs are of heat-treated Meehanite metal. Motion and action of discs reduce the tendency to groove affording long wearing life and results in a uniform product.

The revolving disc is attached by a ball and socket joint under spring tension enabling disc to automatically align itself with the stationary disc. The main shaft is hollow, located eccentrically within it is the disc driving shaft which through the range of gearing has a greater speed than the drive sheave. This high speed accounts in a large measure for the high capacity. Adjustment for product size is carried out by use of convenient handwheel. Grinding chamber is hinged, with lock, affording quick and easy access for removal of sample and for cleaning. Oil lubrication throughout. V-belt or flat belt drives available.

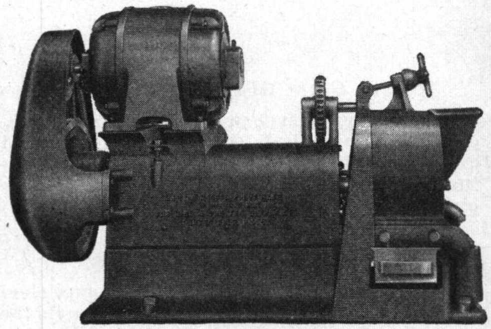
	*V-Drive		*Flat Belt		†Capacity,				Dimensions, in.			
Models	Each	Wt. each, lbs.	Each	Wt. each, lbs.	lbs. per min.	Disc diam., in.	HP	RPM	L	W	H	Flat belt pulleys, in.
6½F	$522.60	590	$312.00	310	1	7	3	275	33	29	16	11x3
9½K	653.60	1060	460.00	590	2	9½	5	275	41	35	29	12x4

*V-Drive with motor and starter. Flat belt with T & L pulleys without motor.
†¼ in. feed to 100 mesh (quartz).

Grinding Discs for Above

For Models	**6½F**	**9½K**
Per set	$11.15	16.05

MASSCO-McCOOL



A highly engineered and carefully designed **gearless type** laboratory pulverizer, having high capacity and low power consumption. It is an ideal unit for grinding virtually any material and pulverizing to any mesh in one operation.

This unit has both a rotary and gyratory disc motion assuring uniform product and long life to the grinding surfaces. The gearless construction results in a smooth running highly efficient machine operating without vibration. The design prevents oil leakage, thereby eliminating possible contamination of samples.

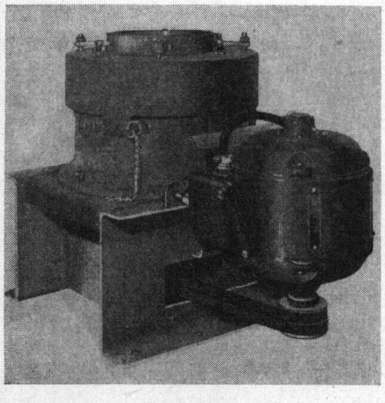
A micrometer adjustment near the hinged grinding chamber lock allows operator to change disc clearance and size of product. The motor, housing and shaft assembly move together, as a sealed unit, in dove-tail slides towards the grinding chamber to compensate for disc wear. Thus the shaft does not move in or out of its bearings and is not exposed to dust which might result in high wear. 100% equipped with anti-friction bearings.

With Motor and Starter

	Each
Massco-McCool Pulverizer—Capacity 2½ lbs. per minute (¼ in. feed to 100 mesh, quartz), 2 HP, 9 in. diam. disc, speed 800 RPM, 45 in. long, 15 in. wide, 31 in. high; wt. each 930 lbs.	$943.00
Grinding Discs—For above ......Per set	13.20

REDUCTION CRUSHERS

MASSCO-GY-ROLL



Reduces ½ in. Feed to As Fine a Product As 10 Mesh—Single Pass

The Gy-Roll Reduction crusher has been developed for crushing jobs in the laboratory and in pilot plants to provide an operation comparable to that obtained by commercial reduction crushers. The product delivered is ideal feed to (1) Ball or Rod Mills, (2) Laboratory Pulverizers. (3) Gravity concentration tests such as tables, sink float, or spiral concentration, (4) sizing analysis, and (5) Sampling. This machine, developed by Dr. Fahremwald of the University of Idaho, replaces such unhandy equipment as rolls and the coffee mill. It is compact, having extremely high capacity and almost unbelieveable low power consumption.

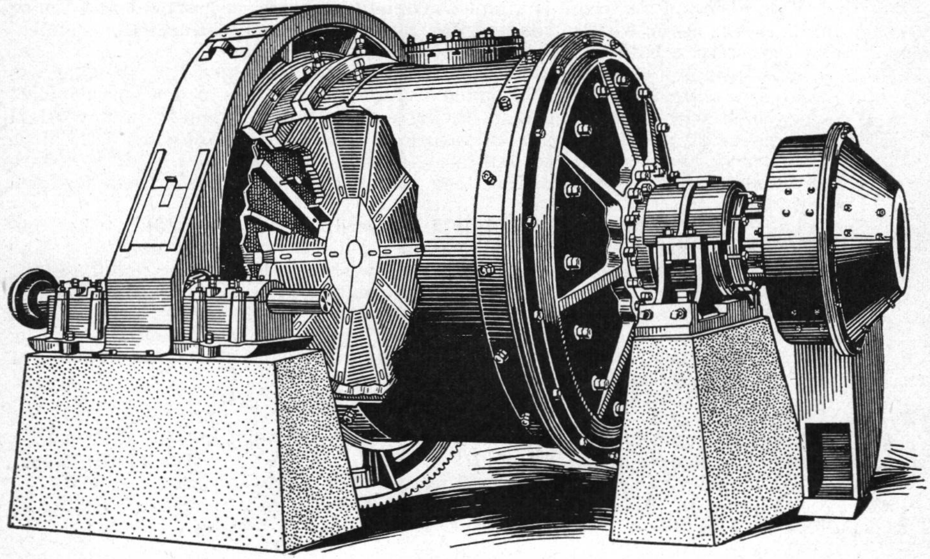
Operating Features

A—It may be either choke or free fed.
B—Under normal conditions it may be stopped and started under full load.
C—There is no tendency for the head to rotate when idling without load. This novel feature is due to the absence of spindle bearing friction coupled with the resistance to rotation by the large diameter thrust bearing.
D—Cleaning between crusher operations is convenient and complete, thereby eleminating salting of samplers.
E—Operation is quiet due to the absence of gears.
F—No cooling accessories are required since there are no gears and no rotating parts.
G—Lubrication and repair parts are practically unnecessary. One machine, run for 12 years, has never required repairs and has been lubricated but twice.

Model, in.	Each	Motor, HP	Dimensions, in.	Wt. each, lbs.
6	$ 592.00	½	23x15x15	185
10	1116.00	1	30x22x22	550

BALL AND ROD MILLS

MARCY (LOW PULP LINE)



Ball Mill

These mills are designed to carry a slow revolving mass of heavy grinding media (balls or rods of assorted sizes), and reduce by either wet or dry grinding 1½ in. or finer feed to a desired finer product. Grinding may be done either in open or closed circuit, but closed circuit grinding with screens or classifier is recommended for grinds finer than 8 mesh when operating a ball mill or 20 mesh when operating a rod mill.

All Marcy Mills incorporate the Marcy principle of grinding—"rapid change of mill content is necessary for high efficiency." This is affected by maintaining a low pulp level within the mill. This not only allows full utilization of the impact and attrition action of the balls or rods but also permits a rapid discharge of finished material. The low pulp level principle allows the pulp to discharge near the periphery of the shell rather than building up and discharge near the center as in the common type overflow mill. A deep pulp level mill loses a large portion of the grinding action in that the pulp acts as a cushion absorbing much of the energy expended by the grinding media.

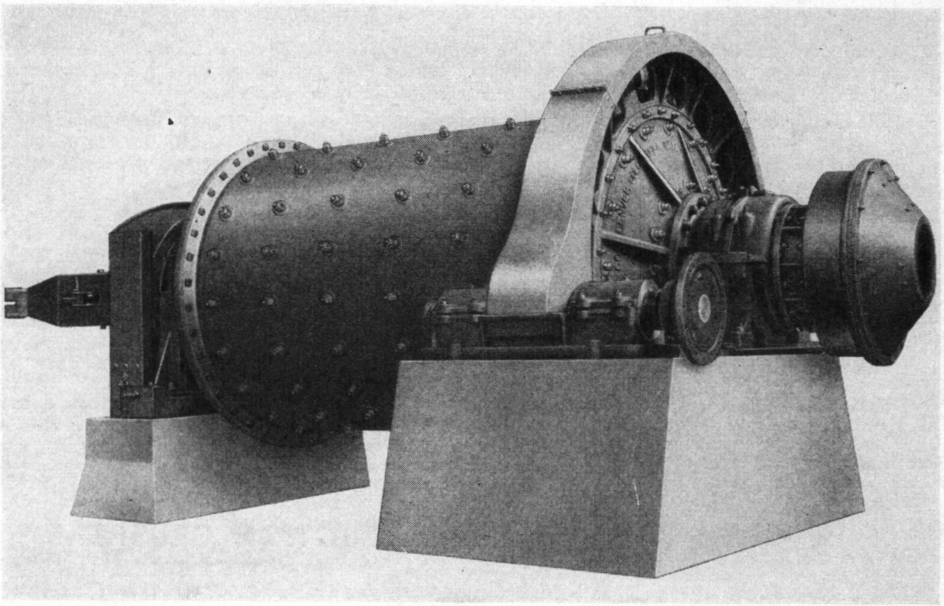
Marcy Mills can be furnished supported by 2-trunnions, a trunnion at the feed end and a tire with rollers at the discharge end, or supported by tire and rollers at each end. Marcy Mills are equipped with spur gears for flat belt, V-belt or speed reducer drive, or with Herringbone or single helical gears for direct-connected motor drive. Sizes range from laboratory and pilot plant units to mills handling thousands of tons per 24 hours. See tables on next page showing some of the many sizes manufactured with their approximate capacity.

Marcy Grate Discharge Ball Mills

The low pulp level principle is accomplished in the Marcy Ball Mill by use of a slotted alloy steel discharge grate; thus pulp flowing through the mill is allowed to discharge quickly at the periphery of the shell.

Marcy Open End Rod Mills

Low pulp level grinding is accomplished in the Marcy Open End Rod Mill through the use of a large discharge opening allowing pulp to leave the mill near the periphery of the shell. A discharge housing with door or a discharge plug arrangement permits the use of the large opening; the plug prevents splash and also retains a high rod load within the mill. The large discharge opening affords quick access to the mill interior for inspection, relining and re-rodding.



Rod Mill

A Few Mining Operations Using Marcy Mills

Phelps Dodge Corporation
Cerro De Pasco Copper Company
International Nickel
Hollinger Consolidated
Chile Exploration Company
Bradley Mining Company
Kennecott Copper Co.
Eagle-Picher Mining & Smelting Co.
U. S. Smelting, Refining & Mining Co.
Cananea Consolidated Copper Co.
Shattuck-Denn Mining Co.
San Francisco Mines of Mexico
Bagdad Copper Company
National Lead Company
New Jersey Zinc Company
Anaconda Copper
Pickands Mather
Calaveras Cement Co.
Climax Molybdenum Company
Aluminum Ore Company
U. S. Vanadium Corporation
American Smelting and Refining Co.

Grinding Capacity and Specification Tables on Following Page

Special Application

A special Marcy Grate Discharge Ball Mill has been developed for use in Metal Reclamation work (brass foundries, etc.). For this work a grate discharge type mill is essential. If overflow mills were used the metal content would build up and soon all grinding action would cease. Such a mill would then necessarily have to be shut down and cleaned out. With a grate discharge mill this would not be necessary as material discharges continuously. Wilfley Concentrating Tables (described on page 734) are used in conjunction with this work. Write for Metal Reclamation bulletin and details.

Marcy Tube Mills

Another Marcy product incorporating the same features and careful design. Recommended for extreme fine grinds. Grinding media consists of small balls or pebbles. Lining may be either steel or silex block type.

BALL AND ROD MILLS

MARCY (LOW PULP LINE)—CONTINUED

Approximate Grinding Capacities of Marcy Ball Mills—Medium Hard Ore, Wet Grind, Closed Circuit

Size of Mill—Mill sizes 30x36, 30x54, 42x36, 42x60 are in inches. Sizes 32, 34, 43, etc. through 1010 indicate size in feet as 3x2 ft., 3x4 ft., 4x3 ft., 10x10 ft.

	Tons Ground Per 24 Hours						Specifications				
Size of mill	1½″ to 8 Mesh	1¼″ to 20 Mesh	½″ to 48 Mesh	½″ to 65 Mesh	⅜″ to 100 Mesh	¼″ to 150 Mesh	*Ball charge (tons)	Horse-power to run	†Motor, HP	RPM mill	Appr. wt. without balls, lbs.
30x36	17	14	9	8	5	4	.98	5–6.5	7½	38	4,800
32	19	15	10	8	5	4	.87	5–6.5	7½	35	6,300
30x54	26	21	14	12	7	5½	1.48	8–10	10	38	5,900
34	37	29	19	16	10	8	1.74	11–13	15	35	7,800
42x36	40	32	22	18	11	9	1.68	11–13	15	34	8,900
42x60	67	53	37	30	18	15	2.80	19–22	25	34	10,700
43	80	64	45	36	22	18	2.73	20–24	25	30	19,600
44	106	85	60	48	29	24	3.64	26–32	30	30	20,800
45	130	106	75	60	36	30	4.55	35–40	40	30	22,000
54	180	145	102	82	51	41	5.26	44–50	50	27	27,600
55	225	180	127	102	63	51	6.57	55–62	60	27	29,000
56	270	217	153	123	76	61	7.87	66–75	75	27	29,500
64½	375	300	210	170	105	85	8.87	85–95	100	24	47,000
66	500	400	280	225	140	113	11.90	115–127	125	24	55,000
67	580	460	325	260	160	130	13.82	135–148	150	24	58,000
75	640	510	360	290	180	145	13.1	135–150	150	22½	78,500
77	880	700	500	400	250	202	18.4	190–210	200	22½	85,500
86	1100	885	625	500	310	250	20.2	220–245	250	21	117,400
88	1430	1150	825	660	410	330	26.9	290–325	300–350	21	132,000
97	1800	1450	1020	815	505	410	29.8	345–380	400	20	161,000
99	2250	1825	1300	1045	640	520	38.2	450–490	500	20	157,500
109	3310	2670	1900	1530	945	765	50.8	630–675	700	17.9	207,200
1010	3680	2960	2100	1700	1050	850	56.4	700–750	800	17.9	216,200

In dry grinding, above capacities reduced 30-50%.

*Based on 50% mill volume with new liners and balls.
†High Starting Torque Motor Recommended.

Approximate Grinding Capacities of Marcy Rod Mills—Medium Hard Ore, 1 in. Feed, Closed Circuit

	Tons Ground Per 24 Hours (Wet)					Specifications				
Size of mill, ft.	8 Mesh	20 Mesh	35 Mesh	48 Mesh	65 Mesh	*Rod charge (tons)	Horse-power to run	†Motor, HP	RPM mill	Appr. wt. without rods, lbs.
2x4	24	18	15	12	9	.8	5–6	7½	38	6,600
2x6	36	27	22	18	14	1.3	7–9	10	38	7,900
3x6	110	82	66	55	41	3.2	18–22	25	30	19,500
3x8	147	110	88	73	55	4.3	25–30	30	30	23,500
4x8	245	185	148	122	92	6.8	40–48	50	25	34,000
4x10	305	230	185	152	115	8.5	50–60	60	25	40,600
5x10SD	425	320	255	215	160	10.6	70–80	100	23	46,000
5x12SD	505	380	305	255	190	12.7	85–95	100	23	50,300
5x10	520	390	315	260	195	12.8	85–95	100	21	60,000
5x12	625	470	380	315	235	15.3	100–115	125	21	63,000
6x12SD	735	550	440	365	275	18.2	115–130	150	19.5	83,000
6x12	855	640	515	425	320	21.6	135–150	150	17.5	90,500
6x14	990	745	595	495	370	25.2	160–175	200	17.5	97,000
7x12SD	1045	785	630	520	390	25.4	165–180	200	16.4	106,000
7x12	1235	925	740	615	460	29.8	187–208	225	15.0	110,000
8x12	1675	1250	1000	835	625	38.5	245–270	300	13.2	122,000
8x15	2090	1560	1250	1040	780	48.2	305–340	350	13.2	152,000
9x12	2240	1680	1345	1115	835	48.7	310–340	350	11.8	163,000
9x15	2800	2090	1675	1385	1040	61.8	390–425	450	11.8	202,000
10x14	3360	2520	2010	1670	1250	70.4	450–495	500	10.6	216,000
10x16	3830	2880	2300	1910	1430	80.5	515–555	600	10.6	246,000
11x16	4850	3640	2910	2410	1810	97.3	635–675	700	9.6	280,000
12x16	6000	4480	3585	2990	2235	116.0	755–795	800	8.8	320,000

In dry grinding, above capacities reduced 30-50%.

*Based on 40% mill volume with new liners and rods.
†High Starting Torque Motor Recommended.

BALL, ROD AND PEBBLE MILL GRINDING MEDIA

Balls

The successful and economical operation of ore reduction mills requires careful attention to the selection of that crushing or grinding medium which will render the most efficient service, and at the lowest cost per ton of products.

For coarse products, large diameter balls, due to their greater weights, will do more crushing than smaller diameter balls. Diameters, weights and exact proportions of balls of various sizes to be used in initial or replenishing charges is a problem to be worked out in each individual case and depends largely on character of material to be crushed.

Size, in.	Wt. lbs. per cu. ft.	Wt. lbs. per ball	No. per net ton	No. per keg	Weight full keg, pounds
2	289	1.18	1690	155	186
2½	284	2.31	860	82	181
3	260	4.00	505	42	168
3½	255	6.34	315	29	163
4	248	9.48	211	17	159
4½	246	13.50	148	12	158
5	211	18.53	108	8	143

Grinding Rods

For rod mill grinding, high carbon, hot rolled and machine straightened steel rods are available. The initial charge of rods is, as a rule, a mixed one, ranging from 1½ to 3 inches in diameter. Renewals are made with the maximum size which has been settled upon as most suitable for the work.

Size diameter, inches	1½	2	2½	3
Weight per foot, pounds	6	10½	16¾	24

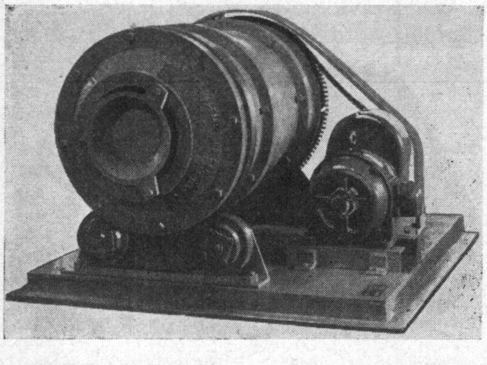
Flint Pebbles

Flint pebbles are used in pebble mills instead of metal balls. These pebbles are usually imported, the best coming from Denmark. They range in size from 1 to 8 inches and are used in the mill in porportions of different sizes, depending upon work to be done.

Size No. of pebble	Approx. diam., inches	Approx. wt. per pebble, lbs.	No. per long ton of 2240 lbs.
1	1 to 1¾	.18	12440
2	1¾ to 2⅜	1.00	2240
3	2½ to 3¼	3.50	640
4	3½ to 5	5	448
5	5 to 6½	8	280
6	6½ to 8	10	224

LABORATORY GRINDING MILLS

MARCY (BATCH OR CONTINUOUS)



Specifically designed for grinding large quantities of ore in either batch or continuous work. May operate either as ball mill or rod mill and on the larger size separate discharge heads are furnished for this specific work. For batch grinding a plug arrangement is furnished to attach to the discharge head, shutting off the discharge opening.

The combination batch-rod-ball mill is furnished in two sizes, 12x24 in. and 18x30 in. These mills are supported by a trunnion at the feed end and by tire and rollers at the discharge end. The 18x30 in. combination mill can be furnished with separate discharge heads, one for rod mill work and one for ball mill work and also may be furnished with a removable shell section allowing the mill to operate as a 18x16 in. ball mill. The Marcy Open End Rod Mill Discharge Head incorporates the principle of low pulp level grinding and is furnished with a discharge plug to retain rods within the mill and prevent splash. The Marcy Grate Discharge Head is furnished with slotted discharge grates allowing a continuous discharge of the mill product, again maintaining the Marcy principle of low pulp level grinding.

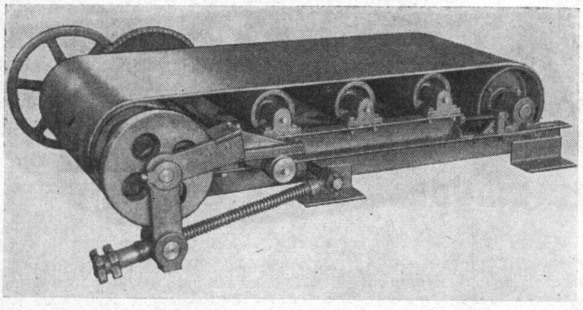
These mills are ruggedly constructed with heavy shell liners cast integral with the shell and with separate easily removable discharge heads allowing interchangeability or complete and easy cleanup between grinds.

Size, in.	RPM		HP	Volume, cu. ft. (New liners)	Wt. each, lbs.
	Ball	Rod			
Flat Belt, V-Belt or Vari-Speed Drive					
12x24	60	45	1½	1.48	1610
Flat Belt, Chain and Sprocket or Gear Motor Drive					
18x30	50	34	3	4.67	2100

Prices on Request

ORE BELT FEEDERS

MASSCO



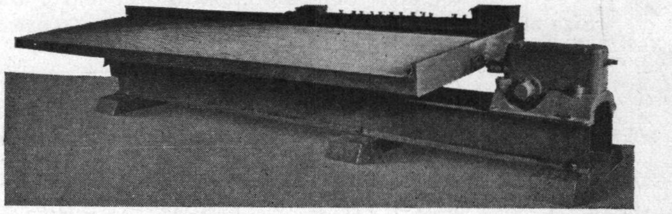
The Massco Belt Feeder consists of a belt conveyor, troughing and return idlers, head and tail pulleys with take-ups, 14 or 18 in. conveyor belt with ⅛ in. top cover, all mounted on a steel frame making a self-contained unit with 4 ft. up to 20 ft. centers. Flat belt or V-belt drives are available. Adjustable stroke mechanism allows feed rate adjustment. A steel feed hopper with gate can be furnished.

Width, in.	Length, ft.		Capacity, tons per hour	Belt speed, feet per min.	Horsepower	
	Min.	Max.			Min.	Max.
14	4	20	0-9	0-30	½	1
18	4	20	0-16	0-30	½	1

Prices on Request

CONCENTRATING TABLES

WILFLEY



The Wilfley Concentrating Table is a mechanically operated longitudinally reciprocating table consisting of a self-oiling enclosed type head motion; a deck of selected red wood having a plane surface with either Linoleum or Rubber cover and partially riffled with selected pine strips; and a sturdy understructure with tilting device.

More than 25000 Wilfley Tables have been manufactured and shipped to all parts of the world. Some plants are still operating their Wilfley Tables installed over 25 years ago. The Wilfley Table is so well known and in such general use that many people when speaking of concentrating tables refer to them as "Wilfley." Such a degree of popularity can be attained only by a machine which is universally recognized as the standard in its field.

It separates materials into bands, each of different specific gravity, and handles the coarsest sands or finest slimes with excellent results. Thousands of these tables are in use throughout the entire world and their efficiency, long-life and low upkeep are recognized by the entire milling industry.

The head motion has a differential movement which gives the greatest stratification and travel to the material with the least amount of agitation. Roller bearings are used throughout the head motion. The light rigid deck moving in an inclined plane is so adjusted that the gangue or waste material will be eliminated all along the table from end to end. The discharge end has sufficient riffle capacity to hold and discharge all concentrates and yet eliminate the gangue. These tables have the most approved type of tilting mechanism for the lateral slope adjustment.

Oil immersed rocker bearings carry the deck on either a steel frame or to supports mounted on concrete piers. This assures maximum rigidity and alignment of mechanical parts.

These tables are manufactured in various sizes. No. 13 is the laboratory size table described below. The No. 6 and No. 11-D are identical, with the exception of the supporting unit. The No. 6 is supported on a steel understructure and the No. 11-D is designed to set on concrete piers built by the user. The No. 11-D has approximately 30% less weight and proves advantageous for special shipments due to this reduced weight. The No. 12 is what we term the half size Wilfley Table having approximately ¼ the deck area of the other tables. This type is ideal for pilot plant work and can be furnished either with a steel frame or to be set on concrete supports.

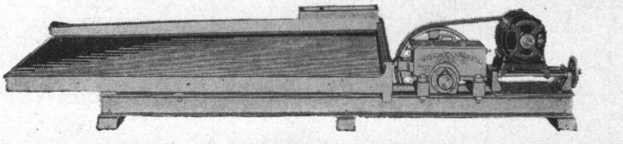
Capacity of any concentrating table is increased as the size of feed is increased. The better the sizing or classification of the table feed, the better the separation. Constant speed or variable speed motor drives or belt driven units are available.

Models	Deck size, in.	Motor HP	*Capacity	Speed	Stroke, in.	†Wt. each, lbs.
6	71x177	1½	15-150	240-300	⅝-1	3100
11-D	71x177	1½	15-150	240-300	⅝-1	2200
12	42x84	1	5-20	260-300	⅝-1	1680

*Tons per 24 hours depending on feed size.
†Weight of V-drive with motor.
Flat belt pulley 14x4 in.

Prices on Request

WILFLEY LABORATORY



This miniature Wilfley Concentrating Table combines all the valuable features of the standard large size tables and duplicates their action entirely. It is ideal for running laboratory tests and also is an indispensable unit as a pilot table to indicate the efficiency of a flotation circuit.

The No. 13 Wilfley Table can be furnished with a single deck or with two interchangeable decks, one having slime riffles, the other with sand riffles. A steel channel understructure supports the deck and enclosed self-oiling head motion with drive. A self-locking tilting device allows adjustment of deck slope. Motor driven for constant or variable speed, or belt driven (6x1 in. pulley) units are available.

¼ HP, 300-375 RPM

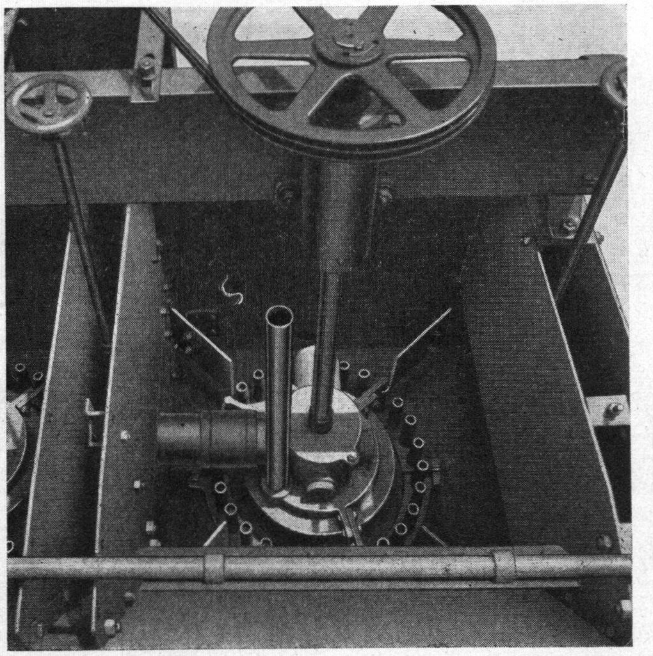
Models	Deck size, in.	No. of decks	Over all, in.			*Capacity, lbs.	†Wt. ea., lbs.
			L	W	H		
13 Std.	18x40	1 or 2	68	22	17	50-150	355
13 Spec.	24x50	1	78	28	14	85-250	410

*Per hour depending on feed size.
†Motor driven units.

Prices on Request

FLOTATION MACHINES

MASSCO FAHRENWALD ALL PURPOSE



The Massco Fahrenwald Flotation Machine is the latest development of Dr. A. W. Fahrenwald, Dean of the Idaho School of Mines. This machine has been designed in collaboration with the Mine and Smelter Supply Company. Dr. Fahrenwald is widely known for his work in the development of flotation and is recognized as an authority on beneficiation of ores by Flotation Methods.

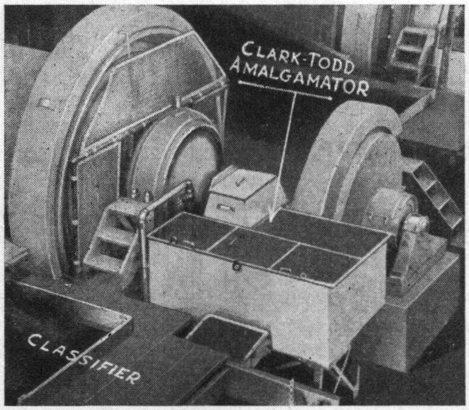
Pulp and air are fed to the impeller independently of each other and at different points on the impeller diameter. There is no gulping or lack of air regardless of the rate of feed or recirculation. All original pulp feed to the initial cell of a series must pass through each and every impeller in the series—no pulp can short circuit a cell.

The rate of aeration is a function of the volume of the pulp flowing upon the impeller, as also is the power. The higher the rate of flow the greater the degree of aeration and consumption of power. The rate of mineral recovery is generally proportional to the increase of aeration and the power input. Cell construction is such that they may be easily altered or reversed should the direction of pulp flow be required. Pulp recirculation may be closely regulated. Cells can be arranged with pulp level control on cells individually or in groups. These cells are fed by gravity. Rougher concentrates can be returned for cleaning by gravity. Anti-friction bearings with oil seals are used throughout. Impellers can be supplied either of flame hardened Meehanite iron or of molded rubber. Drive can be either V-belt or gear motor. Write for further details stating your flotation problems.

Prices on Request

AMALGAMATORS

CLARK-TODD



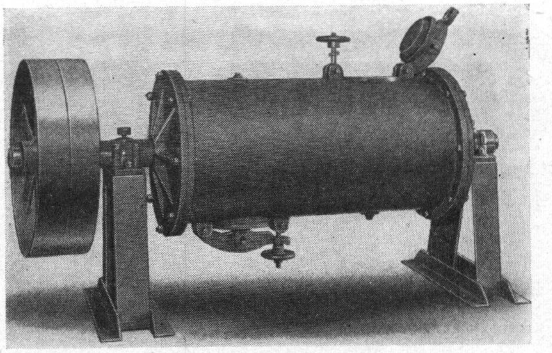
Amalgamation should not be overlooked or discounted by either large or small mine operations. This process is still the simplest and cheapest method of recovering free gold content of an ore in a readily marketable bullion form.

The Clark-Todd Amalgamator, developed at the Homestate Mining Company, is an apparatus which applies the principles of inside amalgamation to ball mill and rod mill grinding circuits. Mercury added to the ball mill unites inside the grinding chamber with the free gold particles to form very finely divided amalgam. This amalgam is discharged with the mill pulp and is separated and collected on the copper plates within the Clark-Todd Amalgamator. All Clark-Todd Amalgamators should operate between the ball mill and classifier in the usual closed circuit arrangement. Each unit includes two sets of copper trays so that while one is in service the other may be in the process of amalgamation cleanup. Write for details.

Prices on Request

CLEANUP OR AMALGAMATION BARRELS

MASSCO



In treating gold ores very often a high grade concentrate is produced which carries very finely divided values of gold particles which do not readily amalgamate. Under such circumstances the Massco Cleanup Barrel has proven of great advantage in reducing the valuable metal to a form acceptable at the U. S. Mint.

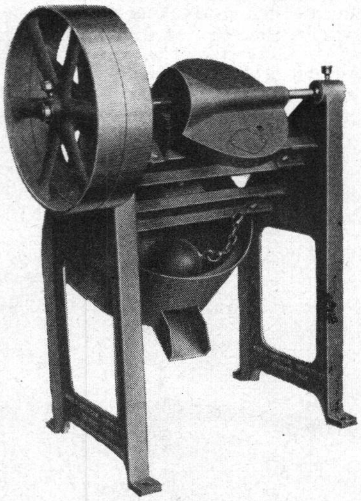
These barrels are made in three sizes. They are constructed with a cast semi-steel drum with machined flanges to receive the cast iron heads and carried in babbitted bearings. Drives can be either tight or loose pulleys or V-belt. One or two quick opening handholes are provided in the shell to facilitate charging and discharging.

Size, in.	Charge, lbs.	HP	RPM	Wt. each, lbs. Flat belt drive	Wt. each, lbs. V-belt drive
24x36	300-400	2	30	1900	**2550**
24x48	400-500	3	30	2600	**3250**
32x48	700-800	5	23	3200	**4000**

Prices on Request

CLEANUP PANS

MASSCO BERDAN TYPE



These machines have found wide application in handling Wilfley table jig or placer concentrates carrying high gold values from which the metal can be recovered by combination with mercury.

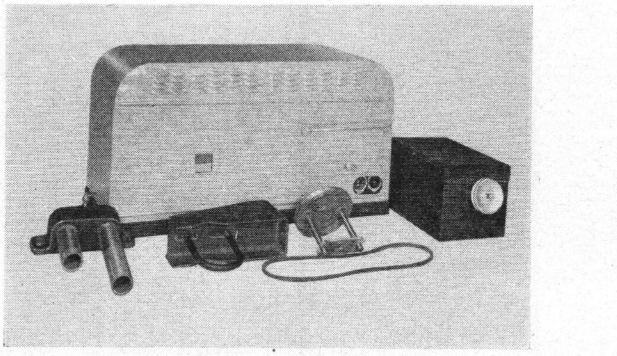
These units are manufactured in two sizes. Each machine is provided with an 8 in. diameter forged steel ball which acts as a muller as the cast iron bowl revolves beneath it. Grinding is done in mercury and the resulting amalgamation is quick and thorough. Drives may be either tight or loose pulleys or V-belt.

Size, in.	Cap., lbs. per hour	HP	Bowl, RPM	Pulley, RPM	Pulley, in.	Wt. each, lbs.
24	50	¾	32	96	24x3	1400
36	100	1½	22	88	18x3	1600

Prices on Request

AUTOMATIC DENSITY CONTROLLERS

MASSCO-ADAMS



One of the most difficult problems facing ore milling, food, chemical, industrial and related plant operations today is the control of density, where variations result in reduced capacity or recovery of a non-uniform product.

The Massco-Adams Automatic Density Controller has been developed to overcome this variable. Only after actual tests and careful development in the field under the most adverse conditions was the commercial model marketed. Many of these units are now operating throughout the entire world.

This controller consists of three main parts, namely: pressure bells, main controller mechanism and dilution control motor.

In operation the pressure bells are partially submerged in the pulp or liquid, the density of which should be controlled. Air lines lead from the pressure bells to the main controller mechanism. The dilution control motor is mounted on the dilution pipe line and electric lead wires connect this to the main controller mechanism.

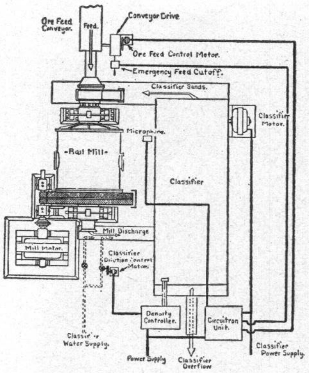
The controller mechanism contains a small air compressor supplying a steady flow of low pressure air to the pressure bells. The bells are of unequal length and under pressure displace two unequal columns of pulp. Back pressure then reflects this difference according to the density of the pulp. This back pressure is carried to the controller mechanism and registers on balanced diaphragms. Any variation in density upsets the balance of the controller mechanism in turn activating the dilution control motor and this in turn varies the flow of diluting material.

The Massco-Adams Automatic Density Controller will maintain density within a one per cent or less variation 24 hours per day. Write for additional information providing full details of your operation.

Prices on Request

AUTOMATIC CIRCUITRONS

MASSCO-ADAMS



Probably the most costly section of any ore milling plant is the grinding circuit. To realize its full value a maximum tonnage must be fed to the mill and a close control of the classifier product maintained. The Massco-Adams Automatic Circuitron has been designed to control the complete grinding circuit. It regulates the mill feed and it controls the size of finished product. It keeps the mill load and the classifier sand load at the optimum point.

The Circuitron consists of two main units: (1) The mill controller regulating new feed; and (2) the automatic density controller regulating the classifier density thereby controlling the size of finished product. The Automatic Density Controller is discussed as a separate item in this catalog. The mill controller responds to variations in the classifier sand load and amount of ore in the mill (by sound); regulating the mill feed accordingly. The density controller responds to the variation of density of the classifier pool and regulates the amount of dilution water added to maintain the proper density. This combination then for controlling is based on the amount of finished and unfinished ore particles discharged from the mill. If the mill feed rate is too high, the mill will become quiet and the classifier sand load will increase above a safe point, while the classifier density is held constant. Conversely if the mill feed rate is too low, the mill will become noisy and a low sand load will result, if the classifier density is held constant. This then shows that the sand load and mill sound indicates the loaded condition of the mill, provided the density of the overflow is held constant.

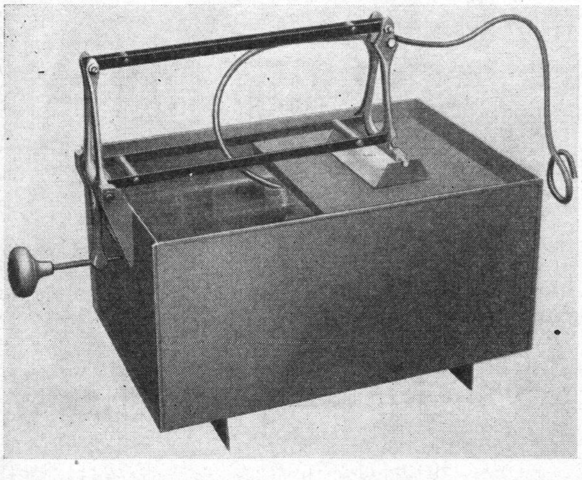
This unit is provided with a safety factor for detecting a loaded mill which may be caused by a sudden coarsening of the feed. In this case the mill controller detects the power drop and in turn stops the feed belt temporarily. The feed rate is thereby reduced even though the classifier sand load has decreased.

This complete unit can be supplied for operating with any type of mill and classifier circuit. Inquiries should state type and size of mill, type and size of classifier, tonnage, grind, size of pipe lines supplying water to the circuit and the approximate water pressure. Obtain further details by writing.

Prices on Request

REAGENT FEEDERS

ADAMS



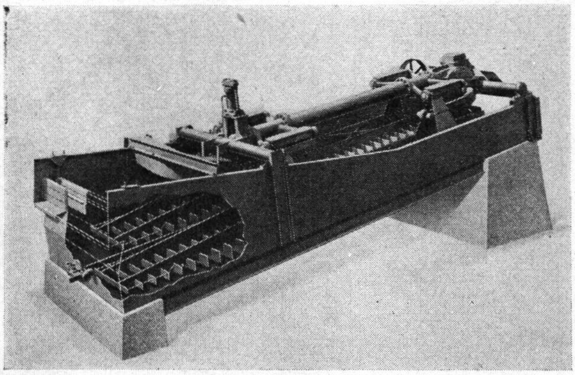
This Reagent Feeder is unique in that it is not dependent upon any drive mechanism and can be easily moved from one location to another. It operates on the principle of a siphon with adjustments made through the use of a micrometer regulating screw. Flow may be varied from one drop a minute to 350 cc per minute depending upon Reagent used.

Tank is normally of 16 ga. steel but will be furnished of stainless steel to resist corrosive Reagents. Siphon is constructed of copper, glass, plastic or stainless steel tubing bent to prevent loss of siphoning action at any time. Strip heater can be furnished to overcome cold temperatures or viscosity changes.

Models	Each	Tank cap., gals.	Dimensions, in. L	W	H	Tank material 16 ga.	Wt. each, lbs.
A-1	$ 79.00	8	12	8	18	Steel	75
A-2	99.00	8	12	8	18	Stainless Steel	75
A-3	178.00	50	36	24	15	Steel	180
A-4	264.00	50	36	24	15	Stainless Steel	180

CLASSIFIERS

DORR TYPE H

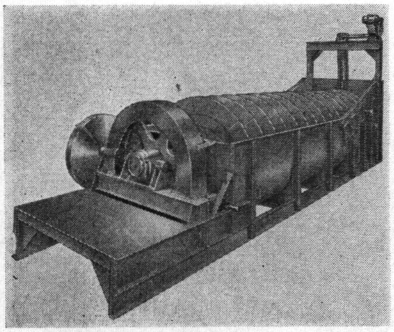


Incorporating a radically different head motion design and rake path, the new Dorr Type H Classifier represents a major step forward in the mechanical refinement of classification units. A reciprocating rake machine, the Type H utilizes fully harmonic motion with the rakes in balance both horizontally and vertically at all times. The resultant rake path is that of a rectangle with well-rounded corners.

The design is simple and rugged with few moving parts. Main bearings are anti-friction type and the lubrication is almost entirely automatic. The rake path provides a long, straight-line raking stroke with gradual acceleration at the beginning to eliminate jar.

The Dorr HX (extra heavy duty) Classifier of the Type H line is now available in duplex and quadruplex single-stage and bowl models. It supplants the FX of the Type F line, and can be supplied for operation at all capacities previously handled by that model. The Model H (normal duty) is now being designed to supplant models FH and F of the Type F line, but model FR (light duty) and laboratory units are available.

AKINS



The Akins Classifier is a patented mechanical classifier designed for classification of ball mill and rod mill products, the separation of sand from slime in the cyanidation process, dewatering of concentrates, sands and other granular material, and for countercurrent washing or leaching of granular products.

In the type "H" the top of the weir is above the shaft but below the top of the spiral at the overflow end. This type provides ample pool area and volume and is well adapted for average closed circuit grinding problems and average classifying conditions.

The type "S" Akins Classifier is the most recent development and in this type the top of the weir is considerably above the top of the spiral, or spirals, at the overflow end, and this machine is also generally supplied with side overflow weirs, greatly increasing the length of overflow weir. This type of machine is used for extremely fine overflow, where overflows of extremely high density are required, or where the ratio of overflow capacity to sand raking capacity is abnormally high. This type is built with spiral diameters up to 54 in., in either single or duplex machines.

If possible, the following data should be supplied:

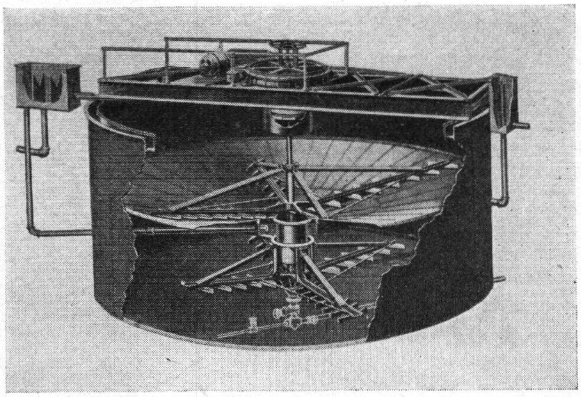
Overflow—Dry tons required per 24-hour day, screen size required, approximate percentage of solids required and specific gravity of the ore or material to be classified.

Sands—Estimated sand load, including circulating sand load if in closed circuit with a grinding unit.

Feed—Screen analysis of the classifier feed if possible.

THICKENERS

DORR BALANCED TRAY

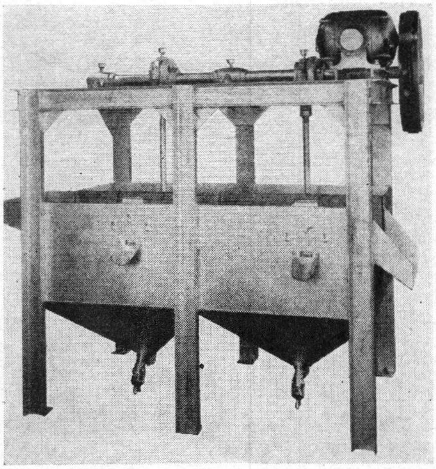


The Dorr Balanced Tray Thickener is one of the most versatile and widely used units of Dorr equipment. It consists essentially of a cylindrical tank, divided by trays into a number of superimposed compartments; a slowly revolving raking mechanism serving each compartment; and a series of feed, overflow and discharge connections for getting material into and out of the unit. Motor-driver rakes plow settled solids to the center of each tray. From a feed at a relatively high dilution there is removed, as an underflow product, a heavy, thick sludge; and, as an overflow product, a clarified liquid virtually free of suspended matter.

The Dorr Balanced Tray Thickener gives maximum capacity per unit of floor area because "balanced tray" design, an exclusive Dorr feature, assures full tray efficiency. The superimposed tray compartments operate in parallel with each compartment sealed off from the others by a sludge seal and each operating as an individual thickener.

Dorr Balanced Tray Thickeners are available in a wide variety of sizes from 10 to 60 ft. in diameter and containing up to five separate compartments to fulfill every continuous thickening need.

HARZ JIGS



Jigs have proven one of the most valuable concentrators yet devised for all coarse products. They can be used in the separation of 2, 3 or 4 minerals. The feed to jigs may be sized products, sorted products or natural products.

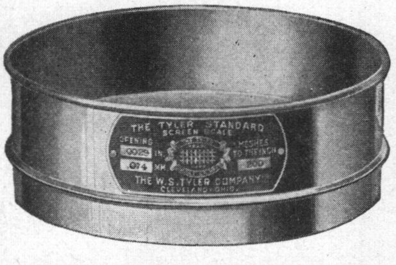
The Harz Jig consists of a wooden or steel tank having a V-bottom with vertical longitudinal partition, the screen which carries the ore is fastened on one side; on the other side is the plunger for creating the water current.

Jigs are built single or double with 1, 2, 3 or 4 compartments.

The standard size of screen box is 18 or 20 by 30 inches for ordinary jigs; other sizes can be made to suit conditions.

TESTING SIEVES

TYLER STANDARD



Full Height, 8 in. Diameter

Meet ASTM requirements for precision testing for fineness of materials and are within the tolerances allowed by the U. S. Bureau of Standards for testing sieves. Each sieve is marked with the size of the openings in inches and millimeters, the number of mesh per inch, and the U. S. Series equivalent number if in that series. Frames are seamless brass with brass or phosphor bronze wire cloth.

The Tyler Standard Scale Series is indicated with an asterisk (*); and have as a base an opening of .0029 inch, which is the opening in 200 mesh .0021 inch wire, the standard sieve, as adopted by the U. S. Bureau of Standards. The openings increase in ratio of the square root of two, or 1.414.

For closer sizing intermediate sieves are shown, having a ratio of the fourth root of two, or 1.189.

2⅝ in. high, 2 in. deep to cloth.

Mesh	Each	U. S. Series equivalent number	Openings in inches	Openings in millimeters	Diam. of wire, decimal of an inch
...	$ 8.30	...	3	.....	.207
...	8.30	...	2	.....	.192
...	8.30	...	1½	.....	.148
...	8.30	...	1.050*	26.67	.148
...	8.30	...	.883	22.43	.135
...	8.30	...	.742*	18.85	.135
...	8.30	...	.624	15.85	.120
...	8.30	...	.525*	13.33	.105
...	8.30	...	.441	11.20	.105
...	8.30	...	.371*	9.423	.092
2½	8.30	...	.312	7.925	.088
3*	8.30	...	.263	6.680	.070
3½	8.30	...	.221	5.613	.065
4*	8.30	4	.185	4.699	.065
5	7.35	5	.156	3.962	.044
6*	7.35	6	.131	3.327	.036
7	7.10	7	.110	2.794	.0328
8*	7.35	8	.093	2.362	.032
9	7.35	10	.078	1.981	.033
10*	7.35	12	.065	1.651	.035
12	7.35	14	.055	1.397	.028
14*	7.35	16	.046	1.168	.025
16	7.35	18	.0390	.991	.0235
20*	7.35	20	.0328	.833	.0172
24	7.35	25	.0276	.701	.0141
28*	7.35	30	.0232	.589	.0125
32	7.35	35	.0195	.495	.0118
35*	7.35	40	.0164	.417	.0122
42	7.35	45	.0138	.351	.0100
48*	7.35	50	.0116	.295	.0092
60	7.35	60	.0097	.246	.0070
65*	7.10	70	.0082	.208	.0072
80	7.35	80	.0069	.175	.0065
100*	7.85	100	.0058	.147	.0042
115	8.10	120	.0049	.124	.0038
150*	9.50	140	.0041	.104	.0026
170	10.90	170	.0035	.089	.0024
200*	12.25	200	.0029	.074	.0021
250	19.65	230	.0024	.061	.0016
270*	27.90	270	.0021	.053	.0016
325	33.50	325	.0017	.043	.0014

Average weight each 2 pounds.

*Standard Sieve Scale, see description above.

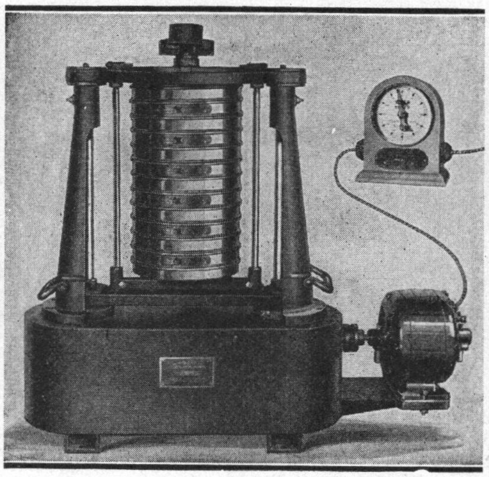
Half Height Sieves—Same dimensions and prices as above; height 1⅝ in.; depth to cloth 1 in.

	Each
Brass Pan—8 in. diam.	$3.80
Brass Pan With Extended Rim—Allows nesting of sieves with intermediate pans and permits two or more sieve tests at one time; excellent for use with Ro-Tap sieve shaking machine; 8 in. diam.	4.50
Brass Cover—8 in. diam.	1.85

One in a box.

TESTING SIEVE SHAKERS

RO-TAP



For 8 in. Diameter Testing Sieves

Reproduces the circular and tapping motion given testing sieves in hand sieving, but with a uniform mechanical action.

With the regular height sieves, one sample can be tested on a series of six sieves of different openings, while with half-height sieves, one sample can be analyzed on a series of thirteen sieves of different openings all with one operation of the machine. By using pans with extended rims, three different samples can be tested at one time with regular height sieves, and seven different samples with half-height sieves. The machine is supplied with a ¼ HP electric motor; speed, 1750 RPM. Running parts operate in oil and the machine is installed easily as no foundation is required. An automatic electric timer can be supplied to insure making tests of comparable time periods.

32 in. high, 34 in. wide, 17 in. deep.

Complete, without sieves or timer.

	Each
Ro-Tap—For 110 volts, 60 cycles, AC; net wt. 335 lbs.; shipping wt. 450 lbs.	$441.00
Ro-Tap—For 220 volts, 60 cycles, AC	441.00
Ro-Tap Timer—Stops shaker automatically after elapse of time set for test	17.50

One in a box.

FOUNDRY RIDDLES

Galvanized Steel Wire Cloth

The cloth is securely fastened to the rim to avoid sagging or pulling out. Without cross wires.

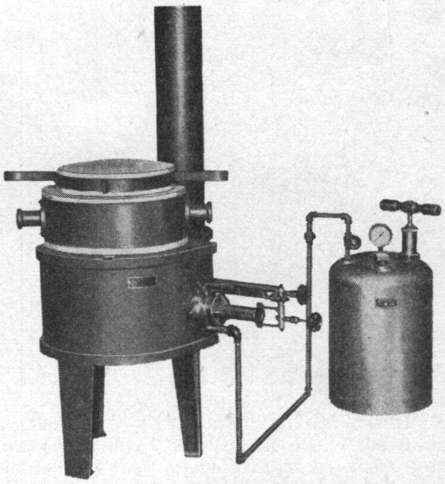
	Each
18 in. diameter—Wt. each 4 lbs.	**$1.95**

Open stock.

Note—Can be furnished with cross wires or with brass wire cloth on special order. Prices on request.

MELTING FURNACES

MASSCO GASOLINE



Melting furnaces furnished complete with gasoline burner, 10-gallon tank, piping and cover, but not crucible or tongs.

A ring to adapt furnace for use of Nevada Type retort for retorting amalgan can be furnished on special order.

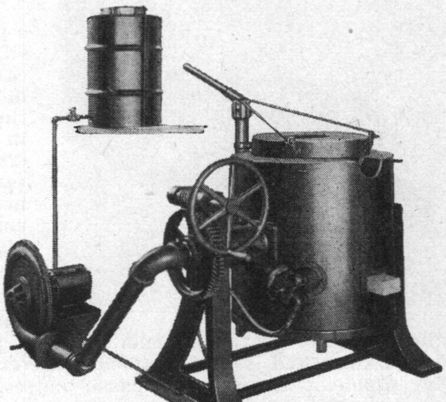
Nos.	**212B**	**212C**
Crucible size, Nos.	25	45
Retort size, pts.	6	10
Wt. each, lbs.	250	450
Each	$136.40	......

Price of No. 212C on Request

Note—Above furnaces can also be supplied with equipment for burning fuel oil.

CRUCIBLE TILTING FURNACES

MASSCO



For use in melting brass, copper, aluminum and other non-ferrous metals, also gold or silver bullion and cyanide precipitates. Normally furnished with a low pressure oil burner. Also available with high pressure oil burner or with gas burner as specified.

Complete as illustrated, with burner, motor blower, graphite crucible, pipe and fittings; also 30 gal. oil tank if required.

When ordering advise electrical characteristics, type of burner and whether oil or gas fired.

Crucible, Nos.	Each	Crucible capacity gals.	Crucible capacity lbs. (brass)	Wt. each, lbs.
40	$ 828.85	2	120	2000
60	847.00	3	180	2300
150	1004.30	6¾	450	2700
275	1179.75	11	725	2950

All above, open stock.

GRAPHITE CRUCIBLES

DIXON

A mixture of graphite and clay especially suitable for high temperature work. Graphite crucibles readily absorb moisture which must be slowly driven out by storage in a warm dry place before annealing and ultimate use. Otherwise pea-hole leaks or cracks will develop rendering the crucible useless. By observing necessary precautions, however, they are very durable.

Additional information on care and use of Graphite Crucibles on request.

Crucibles with long lips for use in tilting type melting furnaces available in various sizes.

Clay lined crucibles furnished on special order.

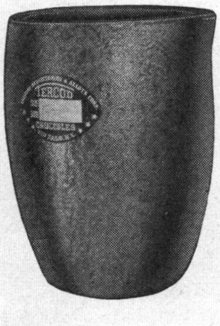
Size, Nos.	Each	Covers, each	Capacity app. lbs., water	Capacity, cu. in.	Capacity lbs., brass	Diameter outside, in. Top	Bilge	Bottom	Height outside, in.	Wt. each, lbs.
0000	$.....	$.....				2⅜	2⅜	1¾	2 15/16	5/16
1	.....	.....	½	13.85	4.430	3¼	3⅛	2¼	3⅝	13/16
2	.....	.....	¾	20.75	6.650	3¾	3 11/16	2⅞	4½	1¼
4	.....	.....	1½	41.50	13.250	4⅝	4 9/16	3⅛	5¾	2½
6	.....	.....	2¼	62.30	19.95	5¼	5¼	3⅞	6½	3¼
8	.....	.....	3	83.20	26.60	5⅞	5⅞	4¼	7⅛	4¼
10	.....	.....	4.81	105.30	33.60	6 1/16	6 9/16	4 15/16	8 1/16	6
16	.....	.....	7.18	151	48	6 15/16	7½	5½	9¼	9
20	.....	.....	10.0	188½	60	7 11/16	8⅜	6⅛	10 5/16	13½
25	.....	.....	12.0	235½	75	8 3/16	8⅞	6½	10 15/16	14¾
30	.....	.....	14.0	282	90	8⅝	9 5/16	6 13/16	11½	19
35	.....	.....	16.0	329½	105	9	9¾	7⅛	12	21
40	.....	.....	18.0	377	120	9⅜	10⅛	7 7/16	12½	23
45	.....	.....	21.0	423½	135	9⅞	10 11/16	7 13/16	13 3/16	27
50	.....	.....	24.0	471	150	10¼	11⅛	8⅛	13¾	30
60	.....	.....	28.0	565	180	10 13/16	11 11/16	8 9/16	14 7/16	36
70	.....	.....	32.0	658½	210	11¼	12 3/16	8 15/16	15 1/16	40
80	.....	.....	36.0	753	240	11 11/16	12 11/16	9¼	15⅝	44
90	.....	.....	40.0	847	270	12⅛	13⅛	9 9/16	16 3/16	48
100	.....	.....	44.0	942	300	12½	13½	9⅞	16 11/16	54
125	.....	.....	50.0	1177	375	13	14 1/16	10 5/16	17⅜	62
150	.....	.....	60.0	1412	450	13¾	14⅞	10⅞	18⅜	67
175	.....	.....	70.0	1645	525	14⅜	15 9/16	11⅜	19¼	78
200	.....	.....	80.0	1882	600	15	16¼	11⅞	20	90
225	.....	.....	90.0	2120	675	15½	16 13/16	12 5/16	20¾	100
250	.....	.....	100.0	2355	750	16	17 5/16	12 11/16	21⅜	103
275	.....	.....	110.0	2590	825	16 7/16	17 13/16	13	22	108
300	.....	.....	120.0	2825	900	16⅞	18¼	13⅜	22½	114
400	.....	.....	160.0	3765	1200	18 3/16	19 11/16	14 7/16	24 5/16	120

Prices on Request

Note—Capacities given are actual total, not working capacities. Working capacity is variable and may be from 70 to 90 per cent of those given. Total capacity in pounds of metal depends on the specific gravity, and may be found approximately by multiplying the total capacity in pounds of water by the specific gravity of the metal.

SILICON CARBIDE CRUCIBLES

TERCOD



Standard Lip

Long life melting crucibles made from silicon carbide, graphite and carbon bond. This mixture features high thermal conductivity resulting in greatly reduced fuel costs.

Especially recommended for brass and aluminum melting.

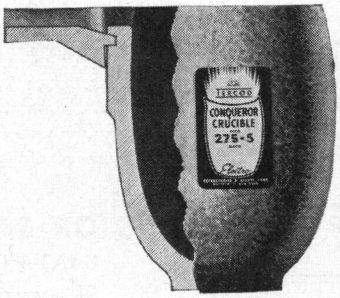
Write for special bulletin including the care and handling of Tercod Crucibles.

Note—We list below the most popular sizes. Additional sizes and shapes available on request. Tercod Crucibles can also be supplied with fused Alumina linings. Also with fused Magnesia, Mullite, Carbon and Zircon.

Nos.	Each	Height outs., in.	Outside diameter, in. Top	Bilge	Bottom	Top thick., in.	Water cap., lbs.	Work. cap. brass, lbs.	Net wt. each, lbs.
50	$16.50	14½	10⅜	11⅜	8½	1⅛	24	190	47
60	19.60	15	11⅛	12⅛	9½	1 3/16	28	221	53
70	22.70	15¾	11⅜	12½	9	1 3/16	32	254	63
80	26.00	16⅜	12⅛	13⅛	10¼	1 3/16	36	285	69
90	29.50	17½	12⅝	13⅝	9½	1¼	40	317	83
100	32.60	17¼	13	14¼	11	1⅜	44	348	97
125	40.75	17⅝	13⅛	14⅞	10⅝	1¼	50	396	96
150	48.90	19⅜	13⅞	15¼	11	1¼	60	475	108
175	Larger Sizes Prices On Request	19¾	14⅜	15¾	11½	1 5/16	70	553	116
200		20⅞	15½	17	12⅞	1½	80	633	148
225		21⅜	15⅞	17⅜	13⅜	1¾	90	712	155
250		21¾	16¼	17⅞	13	1¾	100	792	146
275		23	16⅞	18	12⅜	1½	110	872	158
300		23½	16⅞	18½	13	1½	120	950	164
400		25	18⅜	20⅛	14½	1 5/16	160	1270	192

All above, open stock.

TERCOD TILTING TYPE

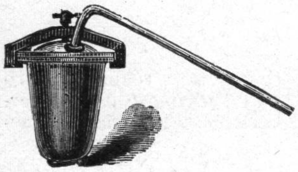


This type of detached Long-Lip eliminates failure through strain or breakage in shipment.

The Lip is shipped loose accompanied with an ample supply of Electro Buffalo Patch No. 1 High Temperature Cement for attaching to the crucible.

Made in one side, the lip is readily adaptable to most commonly called for Tercod Tilting and Bottom Pour type crucibles.

IRON RETORTS

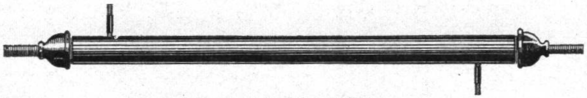


Complete with iron delivery tube.

For mercury distillation, etc. The removable cover being ground smooth, the screw clamp produces a tight joint.

Capacity, pts.	½	1	2	4	8	16
Cap., lbs. quicksilver	6	12	25	50	100	200
Wt. each, lbs.	5	7	10	17	24	40
Each	$7.20	8.00	8.80	11.20	16.00	19.35

RETORT CONDENSERS



Made of Steel Pipe

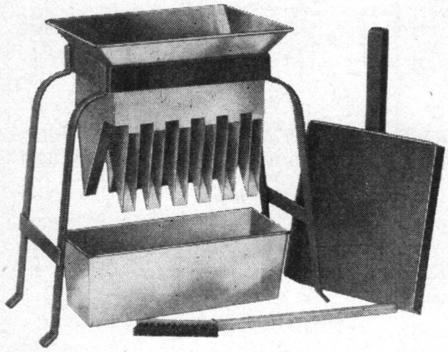
For attachment to the delivery tube of quicksilver retorts to condense the vapor by means of a constant stream of cooling water passed through the condenser water jacket.

⅜ in. IPT (iron pipe thread) threaded pipe connections at each end and ⅛ in. pipe water connection.

	Each
Retort Condensers—Body 30 in. long; 1½ in. diam.; wt. each 8 lbs.	$10.75

Open stock.

ORE SAMPLERS



The construction of this device facilitates quick and even sampling.

Sampler consists of hopper set in 4-legged support, scoop and 4 sampling pans and brush.

All parts can be easily cleaned.

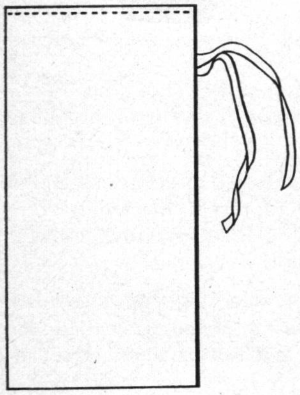
Larger sizes than listed made to order; prices upon application.

Size, in.		**8x10**	**10x18**
Width trays, in.		¾	1
Wt. each, lbs.		16	28
Complete	Each	$35.00	56.00
Pan Only	Each	2.75	3.50
Scoop Only	Each	2.10	4.00
Extra Brushes	Each	1.40	1.40

Open stock.

ORE SACKS OR SAMPLE BAGS

CANVAS



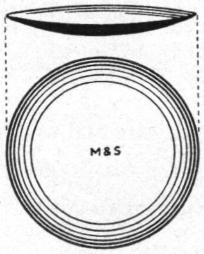
No. 340MI Sample Bags, Ore Sacks, Canvas. Made of closely woven canvas duck. For sampling, storing and shipping ore concentrates, etc. Sizes 12x16 inches are supplied with tie strings. Larger sizes are known as ore sacks and are supplied without tie strings, the 17x24 inch size being the standard 100-pound ore sack.

Size, in.	Per 100	Wt. of canvas, oz.	Wt. per 100, lbs.
4x 7	$ 7.35	8	2
6x10	9.05	8	4⅓
7x14	13.55	8	7
9x15	14.10	8	10
10x21	22.00	8	15
14x24	49.40	10	32
17x24	60.00	10	39
18½x28	80.00	10	63

Open stock.

VANNING PLACQUES

RICHARDS (GOLD PANS)

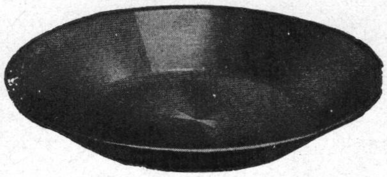


Enameled Iron

	Each
No. 149J—11 in. diam.; wt. each 2½ lbs.	$2.25

Open stock.

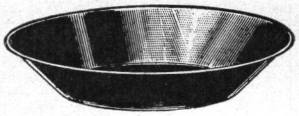
GOLD WASHING PANS



No. 149-F—Polished Steel

Diameter, in.	**12**	**16**
Depth, in.	2	2½
Wt. each, lbs.	1	1¾
Each	$0.80	.90

Open stock.



Steel and Copper

Made of steel with copper bottom.

	Each
No. 149-H—16 in. diam., 2½ in. deep; wt. each 1¾ lbs.	$4.75

Open stock.

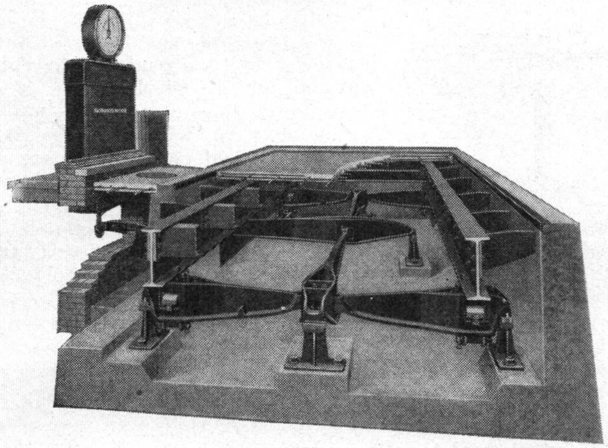
INDUSTRIAL CHEMICALS

Some of the more important heavy chemicals for industrial purposes are listed below. In addition we can supply promptly, reagent and organic chemicals; also biological stains and solutions.

- **Acetone**
- **Acids**
  - Acetic
  - Boric
  - Carbolic
  - Chromic
  - Citric
  - Cresylic
  - Hydrochloric
  - Muratic
  - Nitric
  - Oleic
  - Oxalic
  - Phosphoric
  - Sulphuric
  - Tannic
  - Tartaric
- **Aerofloats Alcohol**
  - Denatured
  - Methyl (Methanol)
  - Methyl Amyl
  - Propyl Iso (Isopropanol)
- **Aluminum Ammonium Sulphate** (Alum Ammonium)
- **Aluminum Sulphate**
  - **Ammonia**
  - Anhydrous
- **Ammonium**
  - Chloride
  - Hydroxide
  - Sulphate
- **Bentonite**
- **Benzol**
- **Bone Ash**
- **Borax**
- **Borax Glass**
- **Borascu** (Non-selective weed killer)
- **Calcium**
  - Carbide
  - Chloride
  - Hypochlorite (Perchloron)
- **Carbon,** Activated
- **Carbon Tetrachloride**
- **Caustic Soda**
- **Charcoal**
- **Chloride of Lime**
- **Chlorine**
- **Chloroform**
- **Copper Cyanide**
- **Copper Sulphate**
- **Ether**
- **Fire Clay**
- **Flotation Reagents**
- **Formaldehyde**
- **Glycerin**
- **Iron Sulphate**
- **Lead Acetate**
- **Lead Foil**
- **Lead Oxide**
  - (Red Lead)
- **Lead, Test**
- **Lime,** Hydrated
- **Litharge**
- **Magnesium**
  - Chloride
  - Sulphate
  - Dioxide
- **Mercury**
- **Napthalene**
- **Nickel**
  - Chloride
  - Sulphate (Single Nickel Salts)
- **Pentachlorophenol** (Wood Preservative)
- **Pine Oil**
- **Potassium**
  - Bichromate
  - Carbonate
  - Chlorate
  - Cyanide
  - Hydroxide (Caustic Potash)
  - Nitrate
  - Permanganate
- **Pumice**
- **Quebracho**
- **Rosin**
- **Sal Soda**
- **Salt**
- **Silica**
- **Soda Ash**
- **Sodium**
  - Aluminate
  - Bicarbonate
  - Becromate
  - Cyanide
  - Hyposulphate
  - Nitrate
  - Silicate
  - Stannate
  - Sulphate
  - Sulphide
  - Sulphite Anhyd (Sentosite)
- **Sulphur**
- **Sulphur Dioxide**
- **Tolinol**
- **Trichlorethylene**
- **Tri Sodium Phosphate**
- **Turpentine**
- **Xanthates**
- **Xylol**
- **Zinc**
  - Chloride
  - Dust
  - Shavings
  - Sulphate

MOTOR TRUCK SCALES

FAIRBANKS TYPE "S" DIAL



Adapted for use in coal yards, building material yards, grain elevators, railroad freight terminals, mines, industrial plants and numerous other places where motor truck loads are to be weighed.

Of simple and unusually sturdy construction to withstand severe shocks and jolting of heavily loaded auto trucks.

The suspended platform design fully protects all vital parts of the lever mechanism from wear and tear when subjected to the abusive conditions of sudden starting and stopping of heavy loads on the platform under their own power. The suspension system allows the platform to return to its correct position by gravity after having been disturbed by loading or unloading.

The direct reading cabinet dial provides numerous distinctive advantages, the double face provides weight reading from either platform or office, allows the driver to trim load to exact weight without weighman's assistance.

Furnished complete with dial and steel cabinet for indoor installation.

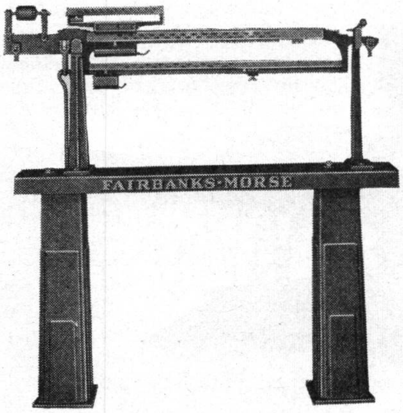
A Fairbanks-Morse Printomatic Weight recorder can be furnished at extra cost.

Nos.	Each	Capacity, tons	Platform, ft.	Wt. each, lbs.
6500-CD	$.....	10	18x9	2210
6502-CD	.....	15	22x9	2610
6504-CD	.....	20	24x10	3210
6506-CD	.....	20	34x10	3470
6507-CD	.....	30	34x10	4210
6508-CD	.....	30	40x10	4560

Prices on Request

MOTOR TRUCK SCALES

FAIRBANKS TYPE "S" BEAM



Basic construction of the weighing mechanism of the beam scale is identical with that of the dial scale, except that it is furnished with an all metal office pillar.

Graduated face plates on the new full capacity beam are set at an angle of 45° to permit easy reading from a natural standing position. The main poise is equipped with stainless steel roller bearings for easy operation.

Necessary foundation and timber or concrete platform are to be supplied by the purchaser.

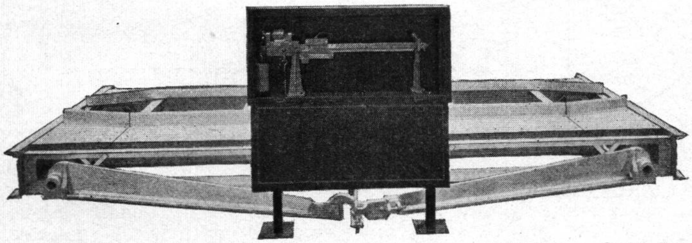
A type registering beam can also be supplied at extra cost if desired.

Nos.	Each	Cap., tons	Platform, ft.	Full capacity beam, lbs. Main bar	Tare bar	Fractional beams	Wt. each, lbs.
6500	$682.00	10	18x9	16000	8000	1000x5	1480
6502	840.00	15	22x9	23000	12000	1000x5	1900
6504	1135.00	20	24x10	30000	18000	1000x5	2510
6506	1509.00	20	34x10	30000	18000	1000x5	2770
6507	2035.00	30	34x10	36000	22000	1000x5	3540
6508	2293.00	30	40x10	36000	22000	1000x5	3890

PORTABLE MOTOR TRUCK SCALES

"CONTRACTORS' SPECIAL" ROAD MATERIAL

Can Be Readily Set Up and Placed in Use Within a Few Hours



Suitable for weighing road material at job setups, stockpiles, and crushing plants, where the use of a scale is needed only for a few hours or several days.

Scale can be set on top of ground with footings or bases under each end (slabs or large timbers are frequently used), so scale will not settle into ground. Incliner or ramps can be easily built.

The scale platform or runways built of diamond plate steel in sections bolted in place, so that runways can be easily torn down, easily handled, and reassembled when desired. Steel frame is composed of heavy channels and angle sections which are bolted together and can be dismounted for easy handling on the construction job.

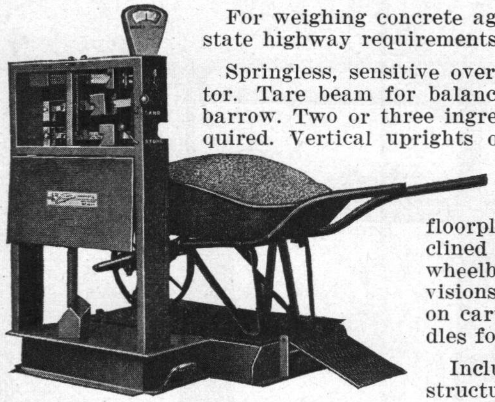
Lever system is simply designed with minimum of parts, resulting in low maintenance cost and satisfactory operation. Knife edges and wearing parts protected by roller bearings. Action of roller bearings at four corners of scale absorbs the shock of trucks driving on and off the scale, thus protecting the knife edges and assuring continued accuracy.

Sturdy all steel beam box with drop door that can be locked. Well finished for weather-resistance.

Capacity, tons	15	18	20	30
Depth, top of platform to base, in.	15	15	18	25
Wt. each, lbs.	4666	5602	6149	6770
Each	$972.00	1125.00	1272.00	1372.00

CART AND WHEELBARROW SCALES

WINSLOW



For weighing concrete aggregates. Meets all state highway requirements.

Springless, sensitive over and under indicator. Tare beam for balancing cart or wheelbarrow. Two or three ingredient beams as required. Vertical uprights of channel sections for greater rigidity. All steel construction, steel floorplate platform. Inclined approach plates on wheelbarrow scales. Provisions for plank runway on cart scales. Grab handles for easy handling.

Included in price are structural steel weighbridge, full capacity beam, shelf and pillars.

Winslow Junior

A light scale, easily handled. Used on bridge and culvert jobs where frequent moves are necessary.

Can be furnished with two or three ingredient beams, each graduated to 500 lbs. by 2 lb. graduations.

21x33 in. platform.

	Each
With One Tare and Two Ingredient Beams	$240.00
With One Tare and Three Ingredient Beams	255.00

Weight each about 295 pounds.

Winslow Type "G"

A substantial scale for large bridge jobs, buildings, etc., where medium size mixers are used.

Can be furnished with two or three ingredient beams, each graduated to 800 lb. by 2 lb. graduations.

30x42 in. platform.

	Each
With One Tare and Two Ingredient Beams	$260.00
With One Tare and Three Ingredient Beams	275.00

Weight each about 350 pounds.

Winslow No. 1

A concrete cart and wheelbarrow scale for use on large concrete jobs where large mixers are used.

Can be furnished with two or three ingredient beams, each graduated to 1000 lbs. by 2 lb. graduations.

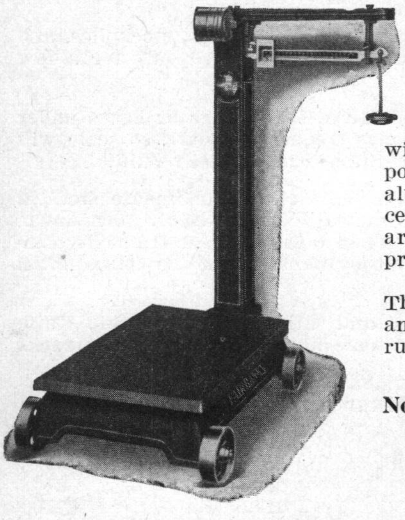
42x42 in. platform.

	Each
With One Tare and Two Ingredient Beams	$290.00
With One Tare and Three Ingredient Beams	305.00

Weight each about 450 pounds.

PLATFORM SCALES

FAIRBANKS, ALL METAL



Single Beam, with Wheels

The arrow tip single beam, with center-indicating sliding poise, is made of non-corrosive aluminum alloy. Pillar, cap and center panel of the platform are made of copper-alloy steel pressed to shape and reinforced.

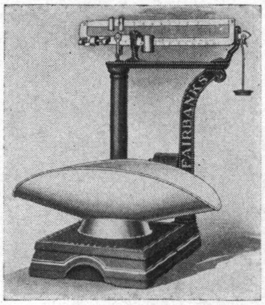
All bearings are self-aligning. The loops, bearings, nose irons and weights are "Parkerized" rust-resisting.

	Each
No. 1124—Capacity 1000 lbs., beam graduated 100x½ lbs., 18x27 in. platform; wt. each 187 lbs.	$54.00

All above, open stock.

COUNTER SCALES

FAIRBANKS, PLATFORM



A high capacity scale for counter use in weighing the heavier commodities. Strongly built of metal throughout, suitable for this service.

Will give accurate weights when used either with or without scoop. Loose weights carried on a convenient rack, make up the full capacity.

Arrow tip nickel plated double brass beam, smooth top. Nickel plated counterpoise and loose weights. Gray frame and platform.

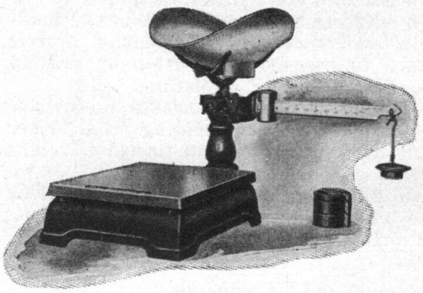
A non-removable sliding poise is fitted to the butt of the beam for counterbalancing the scoop.

Capacity 250 lbs.; upper graduations 10 lbs. x 1 oz., lower graduations 50x½ lbs.; 12x15 in. platform; 14½x7x4 in. scoop.

	Each
No. 505—With seamless tin scoop	$61.90
No. 507—With seamless brass scoop	64.40

Weight each about 74 pounds.

FAIRBANKS UNION



Allow weighing independently with either the scoop or platform.

The single brass beam is of the arrow tip design with a smooth top and fitted with a sliding poise. Rough nickel plated counterpoise and loose weights make up the full capacity.

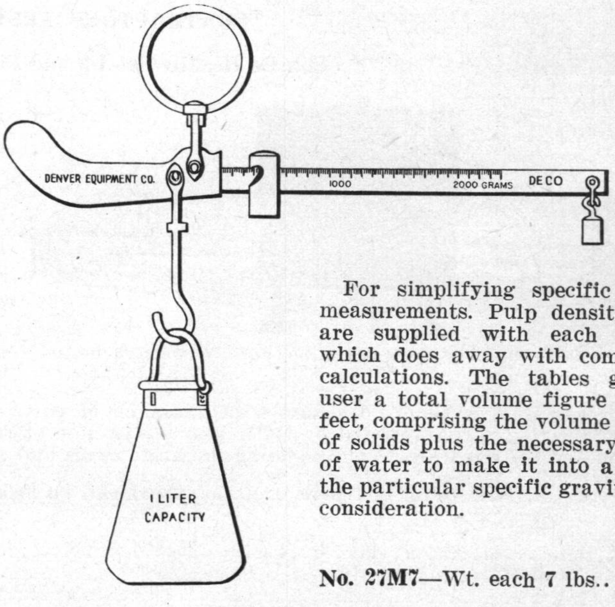
Strong substantial iron frame and large iron platform. The scoop is snugly supported in a broad fork.

Equipped with a convenient shape brass scoop that has a split hoop stand allowing it to be set upon the counter while being filled.

Finished in gray crackle enamel.

	Each
No. 510—Capacity 250 lbs.; beam graduations at top 5 lbs. x ½ oz., at bottom, 50 lbs. x ¼ lb.; 10x13½ in. platform; wt. each 57 lbs.	$35.90

PULP DENSITY SCALES



For simplifying specific gravity measurements. Pulp density tables are supplied with each balance, which does away with complicated calculations. The tables give the user a total volume figure in cubic feet, comprising the volume of a ton of solids plus the necessary volume of water to make it into a pulp of the particular specific gravity under consideration.

	Each
No. 27M7—Wt. each 7 lbs.	$25.00

All above, one in a box.

PLATFORM TRUCKS

THOMAS NON-TILT

Hardwood Frame and Deck, Round Corners

Frame is heavy 2 in. thick hardwood plank stock, interlocked corners. Deck is of smooth, seasoned, 1 in. hardwood stock.

Heavy steel armored pockets, locked, bolted both ways. Molded-on heavy duty rubber or smooth semi-steel wheels. Hyatt roller bearings with hardened outer races; grease gun fittings. Heavy duty ball bearing cone stem swivel casters; grease gun fittings.

Illustrated with **Type A Superstructure,** $1\frac{5}{16}$ in. diameter tube, 40 in. high above floor. Available with several other types of superstructure, removable or locked in place by set screws.

10 Platform Sizes for Every Model

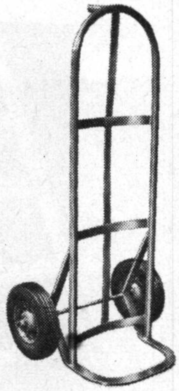
24x42
24x48
24x60
30x48
30x54
30x60
30x72
36x60
36x72
36x96

Model, Nos.	Load cap., lbs.	Wheel sizes, in. Main wheels	Wheel sizes, in. Caster wheels	Axle, in.	Ht. deck above floor, in.
340	1200	8x2	4x1½	1	9½
341	1700	10x2½	5x1½	1	11½
342	2200	12x2½	6x2	1	13½
342W	2600	12x3	6x2	1	13½
344	2500	14x2½	7x2	1	15½
344W	2900	14x3	7x2	1	15½
346	2700	16x2½	8x2	1	17½
346 W	3500	16x3	8x2½	1¼	17½
348	3000	18x2½	9x2	1	19½
348W	3800	18x3	9x2½	1¼	19½

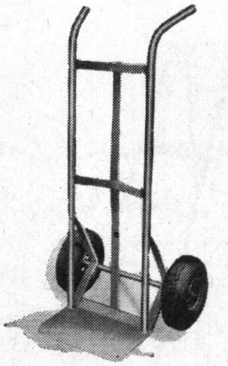
Prices on Request

HAND TRUCKS

"WHEEL-EZY"



No. CK-45-GP



No. CK-145-D-GP

With 10x3.50 Pneumatic Rubber Tired Wheels

Speed delivery and cut handling time. Incorporates all the features of strength, lightness, arc-welded one-piece construction, capacity for handling maximum loads, and perfect balance, all making for "Wheel-Ezy" performance.

The high carbon steel nose with the axle support and "step-climber" feature are joined into one rugged unit.

Specifications

Height over all, in.	45½	Wheels, in.	10x3.50
Width over all, in.	20	Finish	Tangerine
Width of frame, in.	14	Capacity, lbs.	400
Length of nose, in.	7½		

Single Handle

	Each
No. CK-45-GP—Open nose; shipping wt. each 33 lbs.	**$45.20**

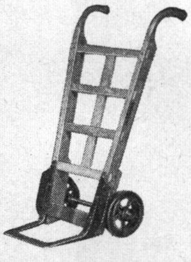
Double Handle

	Each
No. CK-145-D-GP—Plate nose; shipping wt. each 35 lbs.	**$45.45**

Open stock.

BAG TRUCKS

THOMAS



Minneapolis Pattern

Selected hardwood steam bent handles. Smooth rubber tired wheels. Smooth, rounded edges and corners. Cast steel reinforced noses. Hyatt bearings and grease fittings.

Available with protective hub caps, Thomas safety brake, and steel wheels when so ordered.

Nos.	25-A	25-B	25-C
Lgth. hdle., in.	48	52	56
Width frame, in.			
At top	19½	23	25
At nose	12	15	15
Wheel, in.			
Diameter	7	8	9
Tread	2	2	2½
Wt. each, lbs.	35	55	60
Each	$48.95	55.70	69.60

Open stock.

BARREL TRUCKS

THOMAS SAFETY ONE-MAN

For Barrels, Drums, Kegs

Automatic loading and unloading. Trucker never touches barrel. Sliding two-in-one hook fits all wooden and metal barrels.

Easy to use, safe for one man; no back-strain. Balanced truck carries the load.

Welded steel construction for life-time use.

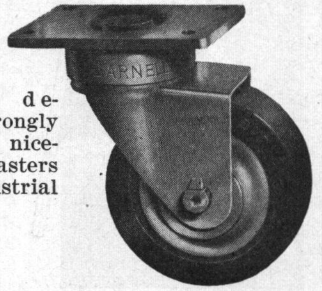
10x2½ in. molded-on rubber tired wheels. Hyatt roller bearings; grease fittings.

	Each
No. 90—Handles 62 in. long, 23 in. wide over all, cap. 1000 lbs.; wt. each 80 lbs.	**$75.00**

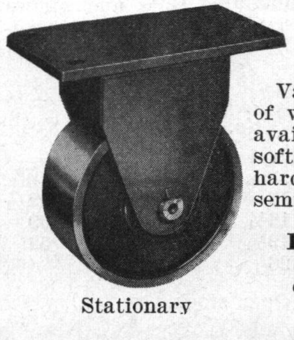
Open stock.

INDUSTRIAL CASTERS

Carefully designed, strongly constructed, nicely finished casters for all industrial uses.



Swivel



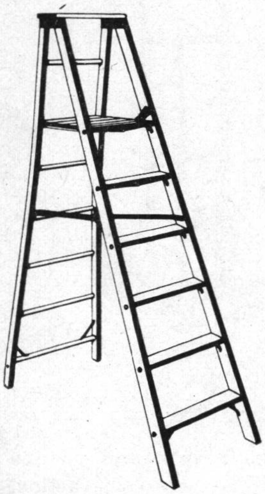
Stationary

Various types of wheel surfaces available, such as soft, medium or hard rubber, or semi-steel.

Complete Information and Prices on Request

STEP LADDERS

DUO-SAFETY, HEAVY DUTY TYPE "B"



With Platform

A heavy duty all-purpose step ladder. Very adaptable because of its rung-back construction and its large platform.

Built for heavy duty with a minimum of weight. Angle braces and truss rods under each step.

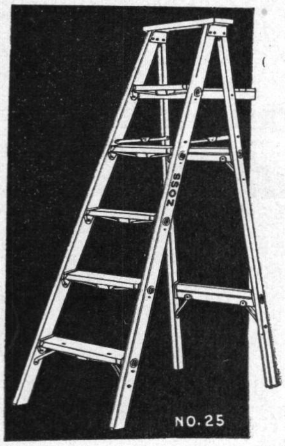
Platform is large and strong enough to permit two men to work on it at one time.

All metal parts are on the inside of the ladder reducing the danger of electrical contact. Tipping hazard reduced by wider angle of stability and greater distance from shelf to platform. Axial locking.

Nos.	Each	Height platform, ft.	Height tool rack, ft.	Ceiling height, ft.	Wt. each, lbs.
6B	$24.75	3⅔	5 7/12	10⅙	29
8B	32.25	5½	7 7/12	12	36
10B	36.45	7⅓	9 7/12	13⅚	45
12B	45.75	9⅙	10⅚	15⅔	60
14B	53.95	10⅚	12⅚	17⅓	72
16B	62.60	12⅔	14⅔	19⅙	90
20B	58.75	16¼	18 3/12	22¾	120

Open stock.

ZOSS "HERCULES"



Safety Designed All-Riveted

Steps are held in place with steel step sockets which are riveted and steel trussed to side rails.

All fittings bolted or steel riveted in place. Steel rod and truss block under each step. The truss - beam construction eliminates slats and allows scaffold plank to extend through the ladder.

Safety all-steel spreader braces.

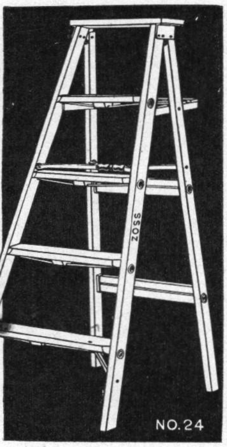
No. 25

Lgth., ft.	Each	Wt. ea., lbs.	Lgth., ft.	Each	Wt. ea., lbs.
4	$ 6.24	13	10	$15.60	32½
5	7.80	16¼	12	19.80	39
6	9.36	19½	16	28.80	52
8	12.48	26			

Open stock.

STEP LADDERS

ZOSS "RIGID"



Truss-Beam Construction

Steel rod under every step with truss - block gives extra strength.

Back standards have strong, wide braces set in steel sockets and reinforced by steel rods.

Equipped with pail shelf and steel spreader brace with bail wood handle.

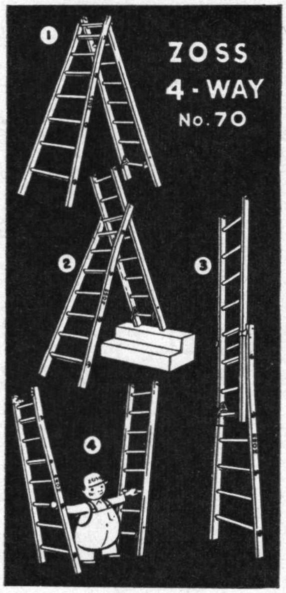
No. 24

Lgth., ft.	Each	Wt. ea., lbs.	Lgth., ft.	Each	Wt. ea., lbs.
4	$ 5.28	13	10	$13.20	32½
5	6.60	16¼	12	17.40	39
6	7.92	19½			
8	10.56	26			

Open stock.

COMBINATION LADDERS

ZOSS "4-WAY"



Selected Solid Hickory Rungs

A sturdily built, versatile ladder, made from seasoned ladder stock.

Positive, dependable locking device.

1—Step ladder or trestle.
2—Stair ladder.
3—Extension ladder.
4—Two straight ladders.

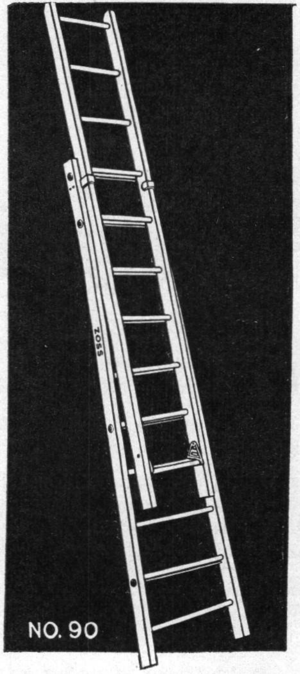
No. 70

Lgth., ft.	Each	Wt. each, lbs.
12	$14.40	24
14	16.80	28
16	19.20	32
32	38.40	64

Open stock.

EXTENSION LADDERS

ZOSS "PUSH-UP"



Selected Hickory Rungs

Made of straight-grain lightweight, seasoned ladder stock.

Safety malleable steel locks.

Wide flared bottom section.

Easy to separate and use as two single ladders.

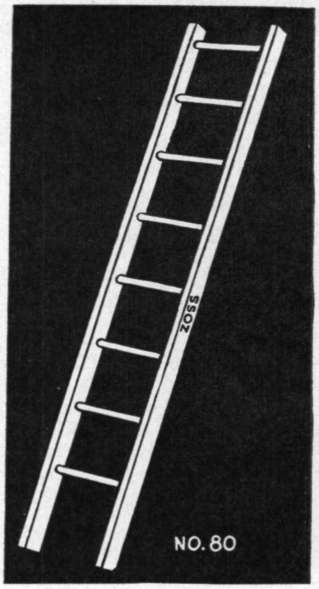
No. 90

Lgth., ft.	Each	Wt. ea., lbs.	Lgth., ft.	Each	Wt. ea., lbs.
20	$20.00	40	30	$30.00	60
24	24.00	48	36	37.80	72
28	28.00	56	40	42.00	80

Open stock.

STRAIGHT LADDERS

ZOSS



Selected Hickory Rungs

A light, strong ladder with rails of straight grain ladder stock.

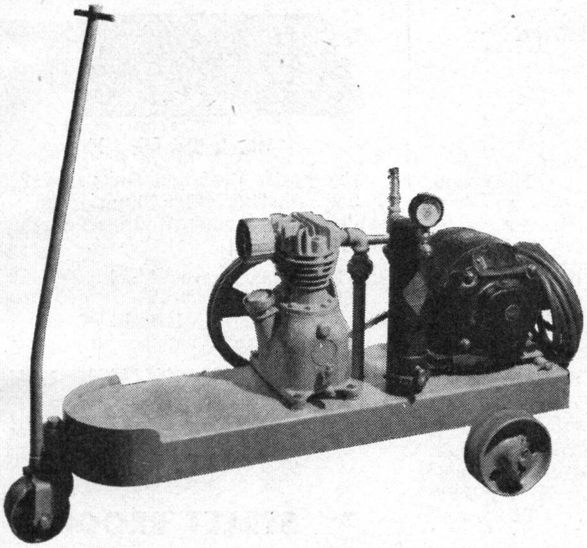
No. 80

Lgth., ft.	Each	Wt. ea., lbs.	Lgth., ft.	Each	Wt. ea., lbs.
12	$ 9.60	24	18	$15.30	36
14	11.20	28	20	21.00	40
16	12.80	32			

Open stock.

SPRAY PAINTING UNITS

GASOLINE OR ELECTRIC, PORTABLE



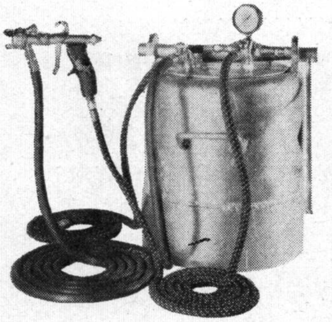
These electric portable airpainting units are especially suited for all around painting, decorating and finishing, and for many other uses where a constant supply of regulated air-pressure is required. Sturdily constructed; easily moved from one location to another. Efficient, durable, economical. Ideal for medium size paint jobs in office buildings, garages, apartment buildings, factories and mills. Paasche quality stands out in the satisfactory service these units continue to give after many years of hard use.

Pressure Feed Material Tanks have the easy, quick opening cover, removed and replaced in less than 15 seconds.

Available in several sizes and for all current characteristics.

Complete Information and Prices on Request

PRESSURE TANK



For High Production Work

For painting buildings, bridges, water tanks, storage tanks, ships, fencing, trucks, where large quantities of material are applied at highest speed and where color changes are infrequent. "Clamp-tight Cover" Pressure Feed Tank with quickly removable cover requires only seconds instead of minutes to remove and replace.

CU High Production Airbrush assures superior finishes—can be equipped with No. 0 Multiplehead for light materials; No. 2 Multiplehead for materials of medium consistency; and No. 4 Multiplehead for heavy bodied materials. All Multipleheads are quickly interchangeable and convertible for internal or external atomization by changing aircaps.

Complete Units

Nos.	F-1037-5	F-1037-10
Size tank, gals.	5	10
Net wt. each, lbs.	65	80
Shipping wt. each, lbs.	85	115
Each	$124.60	141.10

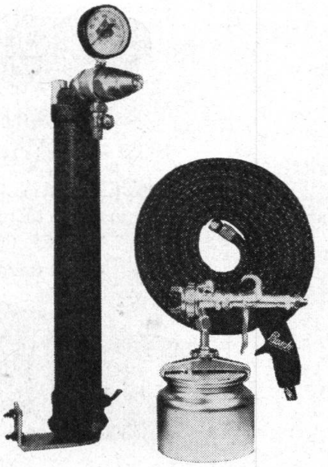
One unit in a box.

Components

	Each
No. **F613-5**—5 gal. tank	$66.00
No. **F613-10**—10 gal. tank	82.50
No. **CUFP**—High production airbrush, Nos. 0, 2 or 4 Multiplehead	32.50
No. **CUR1F**—Size No. 2 aircap for internal atomizing	6.50
No. **HA**—25 ft. ⅜ in. fluid hose, coupled	10.30
No. **HT**—25 ft. 5/16 in. air hose, coupled	6.85
No. **HFA**—⅜ in. valve for fluid shut-off at airbrush	2.45

SPRAY PAINTING UNITS

SYPHON CUP



This compact and efficient airpainting unit with quart cup is used on short production runs and where color changes are frequent. For refinishing automobiles, furniture, machinery, household appliances, etc. Extra cups facilitate making changes quickly when applying more than one color. The CUSF High Production Airbrush, with interchangeable multipleheads in sizes 0, 2 or 4, assures finest atomization and superior finishes. Unit is complete ready to attach to air supply.

	Each
No. **F-962**—Complete, quart size cup; net wt. each 12 lbs; shipping wt. each 20 lbs.	$87.69

One unit in a box.

Components

	Each
No. **CUSF**—Airbrush, Nos. 0, 2 or 4 multipleheads	$37.50
No. **USS**—Quart size syphon feed cup	5.75
No. **AA24 ft. RB2-⅜ in.**—Automatic air conditioner unit, to provide clean dry air	41.50
No. **HT**—8 ft. of 5/16 in. air hose coupled	2.94

AIRBRUSHES

(SPRAY GUNS)

Universal Convertible

Garages, auto paint shops, manufacturing plants, furniture factories and painters find this Universal Convertible Airbrush ideal where maximum production or exceptionally wide spray pattern is not required.

Operates on low air consumption but performs efficiently and provides perfect atomization of material. Applies paints, lacquers, varnishes, enamel, shellacs, water solubles, heated materials, etc. Preferred by many operators for detail work. Quickly changed from narrow to wide fan spray by simple adjustment of multiplehead aircap.

All parts precision built. Body and multiplehead machined from solid brass. Hardened stainless steel fluid tip and needle. Gun is strong, light and easy to handle. Effortless, double action trigger has convenient stroke adjustment for fluid control. Floating air valve, automatically takes up wear and prevents leaking. Non-clogging, slanting swivel fluid inlet insures fast free flow of material. Air inlet is ¼ in. Fluid inlet ⅜ in. Standard pipe thread.

With 0, 2 or 4 multiplehead as specified.

	Each
No. **BUF**—Airbrush complete; wt. each 1¼ lbs.	$26.00
No. **USS**—Quart size syphon feed metal cup	5.75
No. **BUSF**—Airbrush, with stainless steel fluid body, for latex and acids	33.00
No. **BUCF**—Airbrush, with carboloy tip and needle for abrasive material	39.50
No. **BUR1F**—Airbrush, internal atomizing multiplehead for use with pressure cup or pressure fluid tank	26.00
No. **BUR**—Airbrush, external atomizing for round or conical spray for narrow work, stenciling, touch-up, landscape work, etc.	23.75

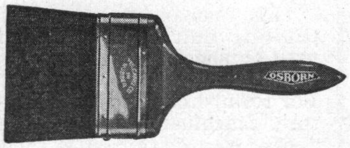
One in a box.

Accessory Parts

	Each
No. **0, 2 or 4**—Multiplehead (specify)	$8.10
No. **BU**—70° fluid assembly	5.50
No. **BUR1F**—Nos. 0, 2 or 4 Multipleheads, internal atomizing, for use with pressure feed cup or tank	5.20
No. **BUR**—Nos. 0, 2 or 4 Multiplehead, round or narrow conical spray	3.70
No. **U**—Nos. 0, 2 or 4	1.90
No. **U**—2 13/32 in. needle	.85

WALL PAINT BRUSHES

OSBORN, FLAT



No. 434—Pure Black Chinese Bristles

Vulcanized in rubber; nickeled ferrule; walnut lacquer finish handle.

Width, in.	Per dozen	Length clear, in.	Thickness, in.	Wt. dozen, lbs.
3	$44.04	3	⅞	4½
3½	62.04	3¼	⅞	5½
4	91.08	3½	⅞	6¾

One-half dozen in a box.

VARNISH BRUSHES

OSBORN, FLAT

No. 453—Pure Black Chinese Bristles

Vulcanized in rubber; nickeled ferrule; walnut lacquer finish handle.

Width, in.	Per dozen	Length clear, in.	Thickness, in.	Wt. dozen, lbs.
1	$4.08	1⅞	$\frac{5}{16}$	⅝
1½	5.04	1⅞	$\frac{5}{16}$	¾
2	6.60	1⅞	⅜	1¼

One dozen in a box.

MOLDERS' BRUSHES

OSBORN, SOFT

Black Horsehair

Staple set in solid hardwood block. 4x19 rows.

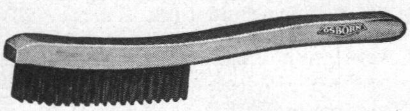
Per dozen

No. 250—9x1⅛ in. block, 2⅞ in. trim; wt. per dozen 7½ lbs. ..$30.24

One dozen in a box.

WIRE SCRATCH BRUSHES

OSBORN



Curved Handle

Solid block; tempered steel wire.

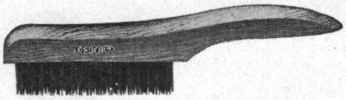
Length of brush part 6 in., length over all 13$\frac{11}{16}$ in., width of block ¾ in., trim 1$\frac{3}{16}$ in.

Nos.	Per dozen	No. of rows	Wt. dozen, lbs.
1777	$5.67	3x19	5
188	6.72	4x19	5¾

One dozen in a box.

STEEL WIRE BRUSHES

OSBORN



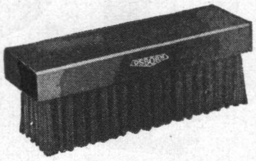
Shoe Handle

Solid block; tempered steel wire.

Per dozen

No. 1781—4x16 rows, brush 5¼ in. long, 1$\frac{3}{16}$ in. trim, 10 in. long over all; wt. per dozen 4½ lbs. .$6.72

One dozen in a box.



Straight Back

Solid block; tempered steel wire.

Fine for rough cleaning because greater direct pressure may be applied.

Per dozen

No. 1780—6x19 rows, 7¼x2¼ in. block, 1$\frac{23}{32}$ in. trim; wt. per dozen 8 lbs. $8.64

One dozen in a box.

Curved Back

Solid block; tempered steel wire.

The wide face and curved back make this a fast working tool.

Per dozen

No. 1779—9x21 rows, 7¼x2⅞ in. block, 1$\frac{3}{16}$ in. trim; wt. per dozen 10 lbs. $11.88

One dozen in a box.

Duster Type

Solid block; tempered steel wire.

Per dozen

No. 1778—4x8 rows, 2½x1⅛ in. block, 9¾ in. long over all, 2½ in. trim; wt. per dozen 3¼ lbs. $7.56

One dozen in a box.

CASTING BRUSHES

OSBORN

Tempered Flat Steel Wire

Well finished solid hardwood block; 5 wires doubled per hole.

7¾x2¾ in. block, 5x10 rows.

Nos.	Per dozen	Trim, in.	Wt. dozen, lbs.
5	$15.36	2	10
6	17.76	3	12
7	19.92	4	14

One dozen in a box.

COUNTER DUSTERS

OSBORN

MASTER DUSTER

Black Tampico Fibre

Especially designed for general factory bench dusting. Its long trim quickly whisks away metal chips, curlings and bench dirt.

Natural lacquered block.

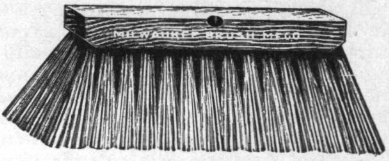
Per dozen

No. 322—2⅞ in., length of brush part 9 in.; wt. per dozen 10 lbs. $23.04

One dozen in a box.

STREET BROOMS

FIBRE



Genuine African Bass

Wide flaring ends. Staple set in solid wood block; two tapered handle holes.

Complete with handle.

Per dozen

No. 1211—16x3½ in. block, 5 rows, length of stock 6¼ in., width of face 22 in.; wt. per dozen 42 lbs. $36.00

One dozen in a carton.

HEAVY DUTY SPEED SWEEP

Highest Grade Bassine Fibre

Exceptionally long tufts, trimmed flat; handle adjustable to height of sweeper; unharmed by grease, oil or water.

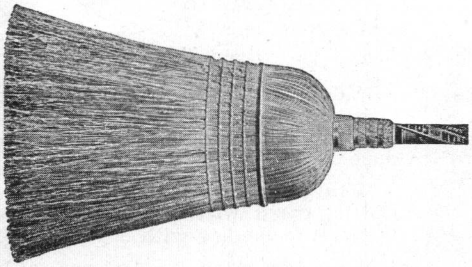
For rough inside and outside work. Ideal brush for wood floors, streets, cement walks, etc., especially where heavy dirt accumulates.

Each

No. 413—18 in. long, 5¼ in. trim; wt. each 5 lbs. $5.85

One in a carton.

WAREHOUSE, MILL AND SMELTER BROOMS

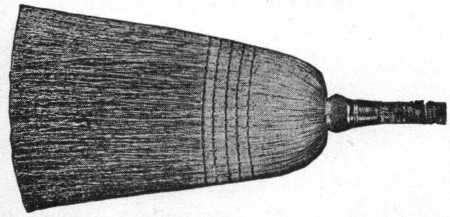


Used by factories, warehouses, railroads, smelters, etc.

	Per dozen
Warehouse—One steel band, four rows twine sewing; lacquered wood handle; wt. per dozen 36 lbs.	$24.00
Smelter—Three steel bands, no sewing, rattan center, lacquered wood handle; wt. per dozen 40 lbs.	27.00

One dozen in a bundle.

HOUSE BROOMS



"Good Value"

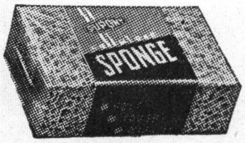
Made of finest corn, carefully stemmed and sorted. 5-sew twine, wire rundown. Lacquered wood handle.

	Per dozen
House Broom—Wt. per dozen 20 lbs.	$19.80

One dozen in a bundle.

SPONGES

DU PONT, CELLULOSE



Coarse Pore, Rectangular

A man made sponge for every cleaning use. Is sanitary, highly absorbent and resistant to chemicals.

Produced from pure cellulose, the material used in the manufacture of "Celophane" and Rayon.

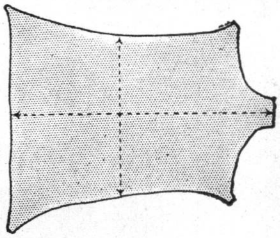
Strong and remarkably durable, yet soft and pliable when wet; cannot harm the finest finish or irritate the most delicate skin.

Highly absorbent—will hold many times its weight of water—yet may be used like a chamois when squeezed "dry."

Entirely free from grit. Can be sterilized in boiling water. Not affected by cleaning chemicals.

Nos.	Each	Size, in.	No. in a case	Wt. case, lbs.
4A	**$0.20**	1 x3 x4½	144	8
6A	.35	1⅓x3⅔x5⅛	144	12
8A	.70	2 x4 x6	72	11
10A	1.00	2¼x4½x7¼	48	11

CHAMOIS SKINS



Selected Quality

Cut and trimmed.

Suitable for filtering mercury, gasoline, etc., or for cleaning purposes.

Nos.	Each	Approx. size, in.	Wt. per ctn., lbs.
89M2	$2.20	16x28	2
89M3	3.55	26x32	4½

One in an envelope, twelve in a carton.

CLEANSERS

COLLOIDAL DETERGENT
ANNITE
"Gentle as a Lamb" "Strong as a Lion"

RED LABEL
Gentle as a Lamb
ANNITE
Strong as a Lion
A Highly Active
COLLOIDAL DETERGENT
ALL-PURPOSE
CLEANSER
"BETTER THAN SOAP"

The Quality All-Purpose Detergent

For general cleaning.

Quickly, efficiently and economically removes grease or oil, which is the base of practically all kinds of dirt, from all washable surfaces and fabrics.

Annite is completely soluble and functions effectively in any water.

Industrial users include transportation companies, power plants, laundries, bakeries, meat packing plants, the petroleum industry, garages and machine shops, etc.

	Per pound
1 lb. package—24 in a case	$0.25
50 lb. bags	.21½
250 lb. barrels	.21½

ROUND TUBS

GALVANIZED

Hot Dipped Galvanized

Top bead completely encircled with extra heavy reinforcing wire. Body swedge adds strength.

Double rolled leakproof bottom seam; corrugated bottom.

Large heavy duty handles riveted tightly under bead.

Nos.	Per dozen	Actual cap., gals.	Diam., in.	Ht., in.	Wt. dozen, lbs.
0	**$24.00**	8	18¼	9¼	48
1	27.72	12	19¾	11	66
2	32.40	14	22	11	84
3	37.08	18½	24½	11¼	98

One-half dozen in a bundle.

WATER PAILS

GALVANIZED

Standard Weight

Hot dipped galvanized. Top bead completely encircled with reinforcing wire. Large, non-wedge, bail supporting ears. Strong attractive body swedge and tight double rolled, leak-proof bottom seam. Dome type, extra strong bottom.

Nos.	Per dozen	Actual cap., gals.	Diam., in.	Ht., in.	Wt. dozen, lbs.
1102	**$10.80**	10	10½	8⅞	23
1122	11.20	12	10 15/16	9¾	25

One dozen in a bundle.

CEMENT PAILS

GALVANIZED

Hot Dipped Galvanized

Conforms to U. S. Government Specifications RR-B-771-A and Amendment 2-Type II. Class B.

Body is No. 24 ga. steel, bottom No. 21 ga.

Butterfly ears and 5/16 in. hot dipped bail — larger than top rim, permits bail to rest against side of pail. Heavy double seamed bottom (no rivets through chime) assures a strong, long-life, water-tight pail, suitable for all purposes.

	Per dozen
No. 3014—Actual capacity 14 qts., 12¼ in. diam., 10¾ in. high; wt. per dozen 70 lbs.	$38.70

One dozen in a bundle.

GARBAGE CANS

GALVANIZED

With Covers

Well designed can of exceptional quality and rigidity. Extra deep corrugations and horizontal swedges give added strength.

Heavy top wire; deep foot, dome type bottom. Large heavy drop handles, deep cover. Nestable.

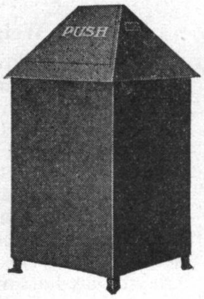
Hot dipped galvanized.

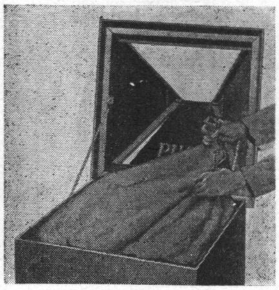
Nos.	Per dozen	Actual cap., gals.	Diam., in.	Ht., in.	Wt. dozen, lbs.
215	**$54.00**	16	16	24	108
221	64.80	22	18	27	144
226	78.30	26½	20	27	162
231	92.25	31½	21	27	180

One-third dozen in a bundle.

WASTE RECEPTACLES

SOLAR SELF-CLOSING





Easy to clean.

To those responsible for the cleanliness, sightliness, safety and hygiene of the factory, school, hotel, department store, public building, restaurant, playground, city streets, etc., we recommend Solar self-closing receptacles. They are constructed of all steel, and pleasingly finished in a choice of gray, green and white enamel.

Easy to Use

A touch from either side and the swing top opens instantly allowing the waste to be easily deposited. It then swings back to the closed position, gently and silently, sealing its contents from sight. The cover is always closed against "fire danger" from within and without.

Nos. 130 and 145 are recommended for washrooms, corridors, offices, restaurants, etc. No. 50 for general use where there is a great amount of waste. Nos. 140 and 60 for outdoor use on streets, parks and grounds.

With Burlap Bag Inner Container

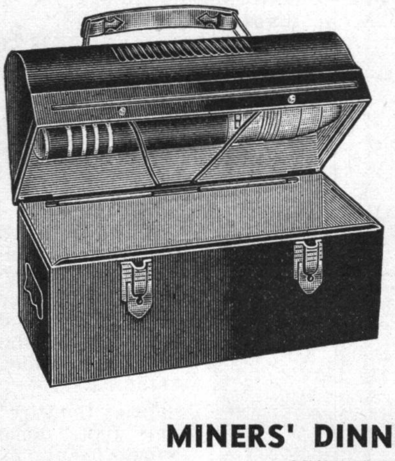
Nos.	Each	Base, in.	Body height, in.	Height over all, in.	Wt. each, lbs.
130	**$25.85**	16x16	26¾	34⅜	42
145	**28.20**	16x16	30½	38⅜	46½
50	**40.40**	21x21	35	46¼	86
140	**36.60**	16x16	30½	38⅜	60
60	**52.50**	21x21	35	46¼	94

One in a carton.

Note—In ordering, specify color wanted.

LUNCH KITS

UNIVERSAL



With Pint Vacuum Bottle

Metal kit, black enameled outside; white enameled inside. Large food compartment. Indentification holder on each end of kit. Collapsible metal handle. Safety catches to secure cover.

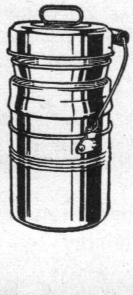
Each

No. VB4061—10½ in. long, 4¾ in. wide, 7 in. high; wt. each 2¾ lbs. $2.89

One in a carton, twelve in a case.

MINERS' DINNER PAILS

ALUMINUM



Polished

Bright natural inset and tray. Specially constructed slip-over cover protects contents. Extra large bottom vessel for liquids.

Per dozen

No. 7677-C—Cap. bottom 4½ qts., cap. inset 3 qts.; wt. per dozen 26 lbs. **$24.00**

One-half dozen in a carton.

WATER BAGS

MINNEQUA

MINNEQUA
WATER BAG
SOAK IN WATER BEFORE USING
Made by
The Pueblo Tent & Awning Co

Open Top

Made from imported Scotch flax and jute cloth. Side seam is overlapped and doubly sewed. Bottom seam is double stitched.

Metal nozzle has a baked aluminum finish; fitted with a cork which is fastened to the bag with heavy twine.

Metal Dee rings are fastened with cross stitched reinforced webbing. Sisal rope handle.

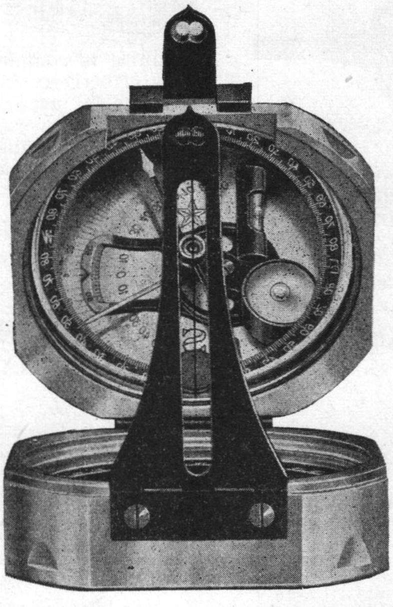
The "Stayon" clamps, an exclusive feature, fits tightly on wet or dry bag, and is easily removed.

Capacity, gals.	1	2
Wt. each, lb.	⅝	¾
Each	**$1.35**	**1.60**

Twelve in a box.

TRANSITS

BRUNTON PATENT



Instrument Opened Showing Details

Improved

A convenient, compact, accurate instrument for preliminary surveying on the surface and underground. Combines the features of the sight or prismatic compass, the clinometer and the hand level.

May be used on a light tripod in conjunction with an attachment head for greater accuracy and vein tracing.

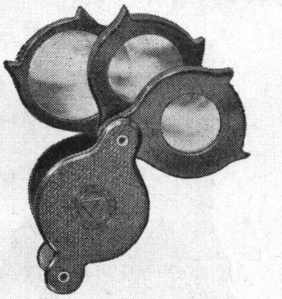
Unless otherwise specified the Brunton Transit is provided with compass circles numbered in quadrants. Circles numbered 0 to 360 counter clockwise for reading azimuths are specified.

	Each
Brunton Transit—Instrument only; wt. each 9 oz.	$36.00
Ball and Socket Attachment Head—Adjusting instrument for use on tripod; wt. each 7 oz.	7.20
Tubular Extension Tripod—Non-magnetic; wt. each 2¼ lbs.	18.00
Alidade Protractor—Wt. each 2 oz.	4.00
Belt Loop Leather Case—For transit only; wt. each 3 oz.	3.60
Single Strap Leather Case—For transit only; wt. each 5 oz.	4.20
Leather Case with Sling Strap—For transit, attachment head and tripod; wt. each 15 oz.	9.90

One in a box.

MAGNIFIERS

BAUSCH & LOMB FOLDING POCKET



No. 81-23-99

These small pocket magnifiers are made with one, two or three lenses set in plastic mountings. All are extremely durable, light in weight and neat in appearance.

The two lens style gives a choice of 3 magnifications and the 3 lens gives 7 magnifications depending upon the combination of lenses used.

Each

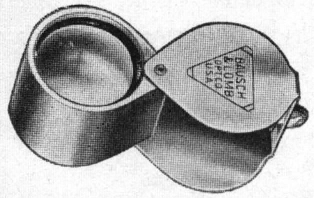
No. 81-23-40—Single, oval shape, 25 mm. diam., 4.0X magnification; wt. each 1¼ oz. **$1.70**

No. 81-23-95—Double, oval shape, 15 and 20 mm. diam., 5.0 to 10X magnification; wt. each 1½ oz.. **2.60**

No. 81-23-99—Triple, bellows shape, 12, 15 and 18 mm. diam., 6.0 to 20X magnification; wt. each 1¾ oz. **3.75**

Five in a package.

BAUSCH & LOMB CODDINGTON



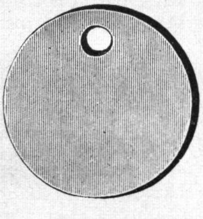
This magnifier gives a good definition and a wide field. It is a single lens of special construction with an internal diaphragm.

Nos.	Each	Focus, in.	Power	Wt. ea., oz.
81-61-27	**$6.00**	1½	7X	5
81-61-31	**6.00**	1	10X	4
81-61-35	**6.00**	¾	14X	3
81-61-45	**6.00**	½	20X	2

One in a package.

MINERS' CHECKS

STEEL



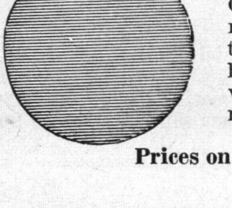
Round, Plain

Diam., in.	**1½**
Hole, in.	⅜
Wt. per 100, lbs.	1⅔
Per 100	**$3.00**

Open stock.

TOOL ROOM CHECKS

BRASS

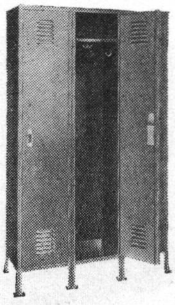


Brass Tool Room Checks can be furnished in any diameter, with any size hole, either plain or with any letters or numbers.

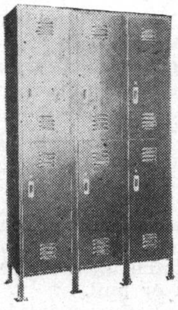
Prices on Request

STEEL LOCKERS

LYON



Single Tier



Double Tier

Positive Latch

Full length pre-locking lock bar.
Single tier doors have 3-point locking device (top, bottom and center).
Double tier doors have 2-point locking device (top and bottom).

Rigid Frame

Vertical members extend to floor to form legs. Vertical and horizontal members rabbetted and welded. Bulb edges add strength and beauty. No bolt heads on locking fronts.

Trouble-Free Hinges

Hinges projection-welded to frames. Butts of hinges are recessed in door frame. Pins can not be forced out. Door may be removed and replaced and still retain perfect alignment.

Recessed Handle

Unmatched modern appearance; satin chrome finish. No protruding parts to snag clothing. Used with padlock or built-in lock.

Single Tier Models

Most practical and widely used of all lockers. Full length clothing storage. Shelf 9 in. from top for hats, etc. One double prong and three single prong coat hooks. Green enamel finish.

Size, in.	1 Wide, each	3 Wide, per opening	Wt. each, lbs.
Single Row			
12x15x60	$15.45	$12.15	59
12x18x60	16.50	12.90	63
12x15x72	16.75	13.25	68
12x18x72	17.95	14.05	72
Double Row			
12x15x60	$14.35	$11.55	53
12x18x60	15.35	12.25	57
12x15x72	15.55	12.60	62
12x18x72	16.70	13.35	66

Double Tier Models

Economical in cost and storage area. One double prong and three single prong coat hooks.

Green enamel finish.

Size, in.	1 Wide, each	3 Wide, per opening	Wt. each, lbs.
Single Row			
12x15x36	$9.60	$7.85	36
12x15x42	Prices on Request		40
Double Row			
12x15x36	$8.90	$7.45	32
12x15x42	Prices on Request		36

Note—Prices shown are for lockers with padlock hasp.

Note—Add 6 in. to height for legs. Weights shown are per locker opening.

Note—In ordering specify number of locker openings per section and whether single row or double row. Set up sections cannot be shipped more than 5 ft. long in single row, or 4 ft. long in double row. In sections of two or more wide, one common side is used between two lockers.

STEEL WORK BENCHES

SPS "HALLOWELL"

Steel Top

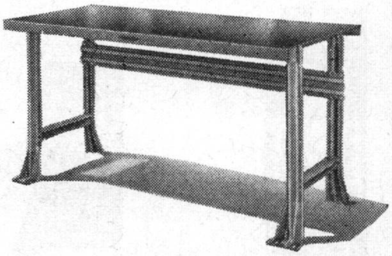
Steel tops are heavy gauge, with deep box flanges front and rear for maximum strength.

Reinforcing stringer assures full rigidity of bench by tying bench legs firmly together.

The bench legs are one-piece uprights providing utmost strength and rigidity without necessity of expensive bolting to the floor.

Finished in standard SPS green.

Regularly furnished in standard length units of 3, 4, 5 and 6 ft. Longer units of 8, 9 and 10 ft. available on special order.

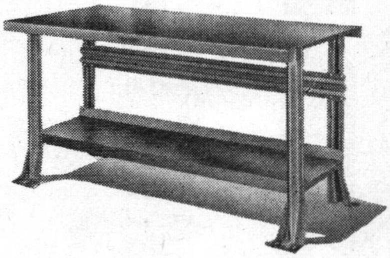


Model 600 "Basic"

Standard bench unit consisting of the following:

1—No. 6000 steel bench top
2—No. 6005 bench legs
1—No. 6010 bench stringer

Drawers and other accessories can be added.

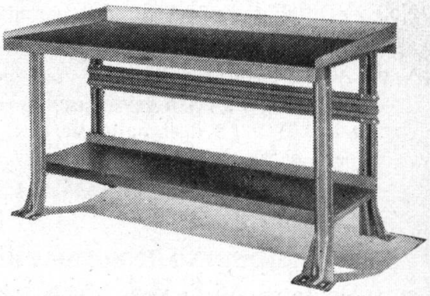


Model 603 "Utility"

Same as Model 600 but with:

1—No. 6026 lower shelf, 10 in. deep for benches 23½ and 24 in. wide or

1—No. 6028 lower shelf, 16 in. deep for benches 29, 30 or 36 in. wide.



Model 606 "Complete"

Same as Model 603 but with:

1—No. 6018 backboard

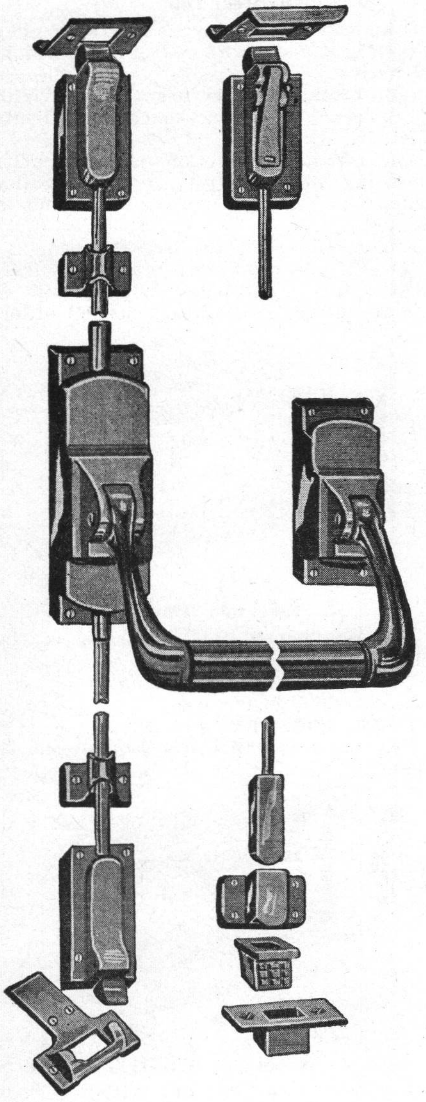
1 pair—No. 6020 end pieces for steel tops, or No. 6022 end pieces for wood or Presdwood covered steel tops.

Note—Above benches can be furnished with masonite tempered Presdwood covered steel tops or 1¾ or 2⅝ in. thick laminated wood tops.

Complete Information and Prices on Request

PANIC EXIT DEVICES

MONARCH VERTICAL ROD, BRASS



No. 11-V-1 for use with threshold

No. 11-V-2 for use without threshold

For Single or Double Doors Where both Exit and Entrance are Desired

For use on single door where 2-point latching is desired, or for use on both leaves of a pair of doors, for 2-point latching on each door.

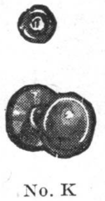
Double acting bar instantly retracts top and bottom latch upon slightest push or pull.

If installed on entrance door use with No. K or No. S trim.

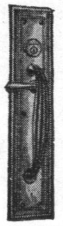
Polished Brass

	Per set
No. 11-V-1—For use with threshold; wt. per set 16 lbs.	$87.40
No. 11-V-2—For use without threshold, automatic device holds latches retracted until door is closed, preventing scraping; wt. per set 16 lbs.	87.40

One set in a box.



No. K



No. S

Outside Trim

For above devices when used on entrance door.

Polished Brass

	Each
No. K—Outside cylinder, knob and roses	$10.40
No. S—Outside cylinder, pull handle, lever arm and escutcheon	22.80

Note—When ordering above devices complete with outside trim add trim number to device number. For example: No. 11-V-1-K or No. 11-V-2-S designates vertical rod devices complete with No. K or No. S outside trim.

ORDERING INFORMATION REQUIRED

1—Hand of door-right hand reverse bevel (RHRB) or left hand reverse bevel (LHBR).

2—Width, height, thickness. Example: 3′0″x7′2″x2¼″.

3—Width of stile and thickness of stop. Example: 5″ stile, ½″ stop.

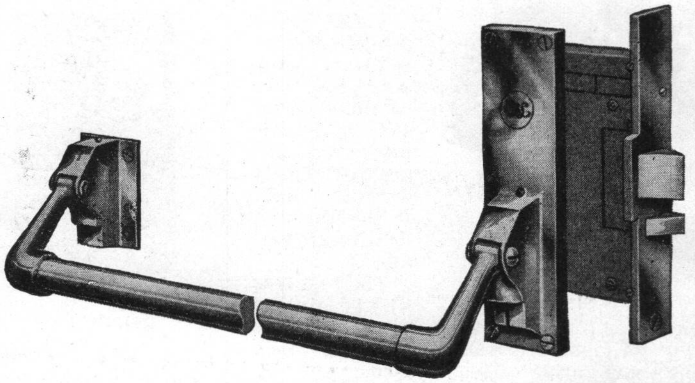
4—Kind of frame—wood (WF), hollow metal (HM), channel iron (CH), or specify what member are to be applied with machine screws.

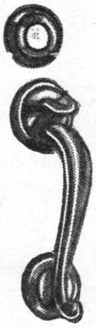
5—Kind of threshold or stile—stone, cement, metal or wood.

6—Single or double doors (If double, kind of astragal—split or T astragal).

7—Height of cross bar— if other than standard 6 in. height

MONARCH MORTISE TYPE, IRON





No. T

For a Single Door or For the Active Leaf of a Pair of Doors, Where Both Exit and Entrance is Desired

Device responds to slightest push on the bar. When free swinging is desired a dogging device, operated by key, is provided to make the device inoperative.

Furnished with closed strike for single doors, open strike for double doors.

Minimum door thickness 1¾ in.; stiles 4½ in.

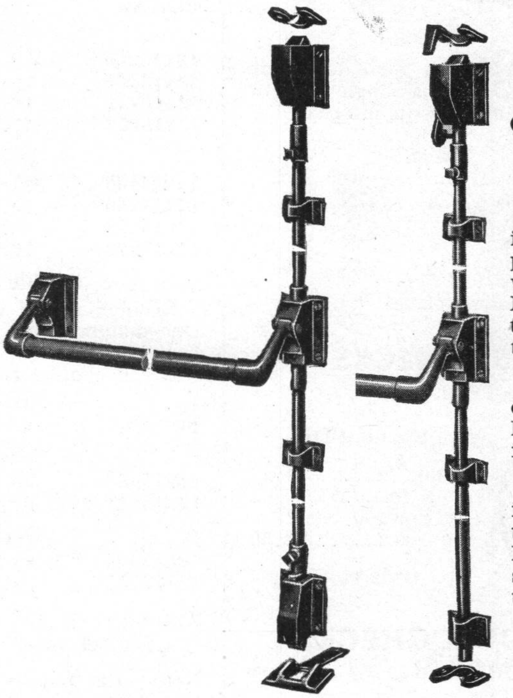
Complete With No. T Outside Trim

Including outside cylinder, rose and pull handle with thumb piece.

Baked wrinkled black finish, with outside trim, mortise lock face and strike polished brass.

	Per set
No. 41-M-T-RH—Right hand; wt. per set 8 lbs.	$63.20
No. 41-M-T-LH—Left hand	63.20

MONARCH VERTICAL ROD, IRON



No. 41-V-1 For use with threshold

No. 41-V-2 For use without threshold

Used for Exit Only, When Used Singly or Paired Together

Can be used on inactive door of a pair of doors when paired with No. 41-M mortise type device on active door.

Surface mounted, top and bottom latching. Reversible.

Single action instantly retracts top and bottom latches upon slightest push on the bar.

No trim used.

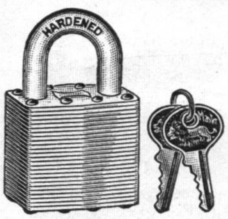
Baked Wrinkled Black Finish

	Per set
No. 41-V-1—For use with threshold; wt. per set 12 lbs.	$28.20
No. 41-V-2—For use without threshold; wt. per set 11½ lbs.	26.20

One set in a box.

PADLOCKS

MASTER STEEL



"Secret Service" Laminated Steel Case

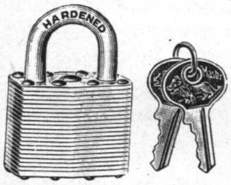
Cadmium plated steel case, cadmium plated hardened alloy steel shackle, solid brass locking lever, steel pilfering protector, solid brass cylinder, pin tumblers, 2 nickel silver keys, changes unlimited.

Each

No. 5—2 in. case, ⅜ in. diameter shackle, 1 in. shackle clearance; wt. each 1 lb. $1.50

No. 5KA—Keyed Alike, otherwise same as above 1.50

One in a box, six in a display carton.



"Secret Service" Laminated Steel Case

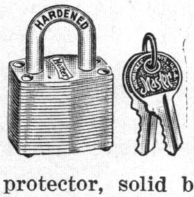
Cadmium plated steel case, cadmium plated hardened alloy steel shackle, solid brass locking lever, steel pilfering protector, solid brass cylinder, pin tumblers, 2 nickel silver keys, changes unlimited.

Each

No. 1—1¾ in. case, 5/16 in. diameter shackle, ¾ in. shackle clearance; wt. each ⅔ lb. $1.25

No. 1KA—Keyed Alike, otherwise same as above 1.25

One in a box, six in a display carton.



"Secret Service" Laminated Steel Case

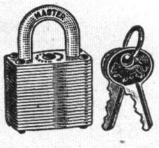
Cadmium plated steel case, cadmium plated hardened alloy steel shackle, solid brass locking lever, steel pilfering protector, solid brass cylinder, pin tumbers, 2 nickel silver keys, changes unlimited.

Each

No. 3—1½ in. case, 9/32 in. diameter shackle, ¾ in. shackle clearance; wt. each ½ lb. $1.00

No. 3KA—Keyed Alike, otherwise same as above 1.00

One in a box, six in a display carton.



"Secret Service" Laminated Steel Case

Cadmium plated steel case, cadmium plated alloy steel shackle, solid brass locking lever, steel pilfering protector, solid brass cylinder, pin tumblers, 2 nickel silver keys, changes unlimited.

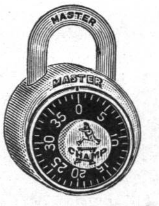
Each

No. 7—1 3/16 in. case, 3/16 in. diameter shackle, 9/16 in. shackle clearance; wt. each ¼ lb. $0.75

One in a box, six in a display carton.

PADLOCKS

MASTER



"Champ" Combination; Double Case

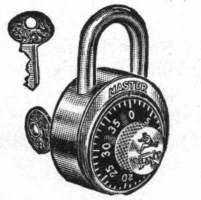
Lacquered wrought brass outer case, cadmium plated steel inner case, cadmium plated steel shackle.

Self-locking, double acting brass locking lever, brass dial finished in black with white numerals. Brass knob with knurled edge, practically unlimited combinations.

Each

No. 1500—1⅞ in. outer case, 9/32 in. diam. shackle, 13/16 in. shackle clearance; wt. each ⅜ lb. $0.89

One in a box, six in a display carton.



"Champ" Key Controlled Combination; Double Case

Incorporates all the strength, extra security and dependability of No. 1500 plus a key controlled mechanism featuring genuine brass cylinder and nickel silver pin tumbler security.

Authorized persons can gain ready access by a slight turn of the control key. Installation record maintained at factory permitting extension of system under same key.

Without Master Key

Each

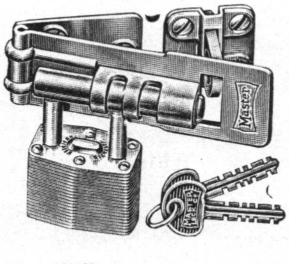
No. 1525—1⅞ in. outer case, 9/32 in. diam. shackle, 13/16 in. shackle clearance; wt. each ½ lb......$1.80

One in a box, six in a display carton.

Each

Master Key—For No. 1525 padlocks $0.60

MASTER HASPLOCK



Wrought Steel

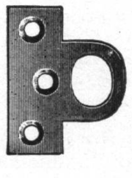
Combination padlock, slide bolt and hasp. 2 corrugated embossed steel keys, 60 changes.

Each

No. 450B—1¾ in. steel lock; 4x1¾ in. cadmium rustproof hasp; wt. each 1 lb. $1.25

One in a box, six in a display carton.

PADLOCK EYES



Wrought Steel, Cadmium Plated

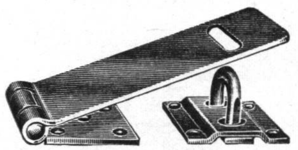
Used in pairs, being attached to edge of door and jamb. When doors are closed all screws are concealed and padlock shackle can be slipped through both eyes.

Per dozen pairs

No. 1245-K—Size No. 2, 2⅛x1⅞ in., 3 screw holes, for ⅞ in., No. 10 screws; wt. per dozen pairs 2¼ lbs. $2.60

One dozen pairs in a box, with screws.

SAFETY HINGE HASPS



No. SC915—Wrought Steel, Plain; One in a Box, with Screws

Adjustable staple.

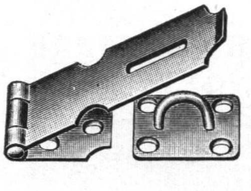
Lgth. slotted part, in.	**3½**	**4½**
Width joint, in.	1½	1½
Screw holes	7	7
Screws, Nos.	7	7
Wt. per 100, lbs.	30	40
Per 100	$31.60	37.90

Lgth. slotted part, in.	**6**	**7**
Width joint, in.	1⅞	2½
Screw holes	9	9
Screws, Nos.	9	11
Wt. per 100, lbs.	79	190
Per 100	$55.55	170.50

No. 915—Wrought Steel, Plain; without Screws

Lgth. slotted part, in.	**3½**	**4½**	**6**
Wt. dozen, lbs.	3	4	8
Per dozen	$2.60	3.25	5.15

One dozen in a box.



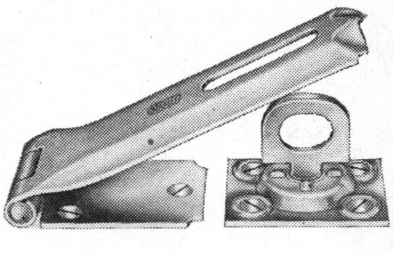
Wrought Steel

Length slotted part 2½ in., hinge part 1⅛x1 5/16 in., width joint 15/16 in.

Per dozen

No. 346-C—Bright brass finish; wt. per dozen 1 lb. $3.05

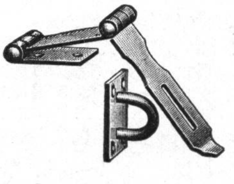
One dozen in a box, with screws.



No. SC917—Wrought Steel, Plain; One in a Box, with Screws

Formed for strength and neat appearance; finger notch at end. Staple clicks into position on each quarter turn; cannot be rattled open.

Lgth. slotted part, in.	**3½**	**4½**	**6**
Width joint, in.	1½	1½	1⅞
Number of screws	7	7	9
Size screws, Nos.	7	7	9
Wt. per 100, lbs.	30	39	65
Per 100	$50.00	56.85	71.30



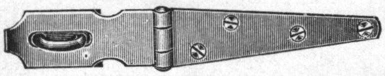
No. 925—Wrought Steel, Plain; Double Hinge; without Screws

For use on tool chests, etc.

Lgth. slotted part, in.	**3**	**4**
Size hinge part, in.	1⅜x1 1/16	1¾x1 9/16
Between centers, in.	1 11/16	2 11/16
Screw holes	7	7
For screws, Nos.	7	9
Wt. dozen, lbs.	2⅝	6¼
Per dozen	$8.25	10.75

3 in., one dozen; 4 in., one-half dozen in a box.

HINGE HASPS



No. SC912—Wrought Steel, Plain; One in a Box, With Screws

Length strap, in.	**3**	**4½**	**6**
Lgth. slotted part, in.	3	3¼	4
Width joint, in.	1⅛	1⅛	$1\frac{9}{16}$
Screw holes	7	8	8
For screws, Nos.	6	6	9
Wt. per 100, lbs.	21	27	51
Per 100	$27.35	32.65	50.20

Length strap, in.	**8**	**10**
Length slotted part, in.	4¼	$5\frac{7}{16}$
Width joint, in.	1⅞	$2\frac{1}{16}$
Screw holes	8	8
For screws, Nos.	10	10
Wt. per 100, lbs.	78	123
Per 100	$85.25	167.35

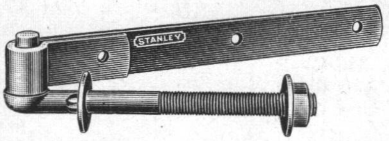
No. 912—Wrought Steel, Plain; Without Screws

Length strap, in	**3**	**4½**	**6**
Wt. dozen, lbs.	2	2⅝	5⅛
Per dozen	$2.40	2.95	4.75

One dozen in a box.

BOLT HOOK AND STRAP HINGES

STANLEY

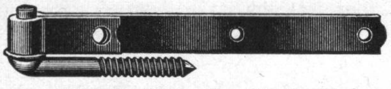


No. 952PS—Wrought Steel, Plain

Length strap, in.	**8**	**10**	**12**
Width strap, in.	1¼	1¼	1¼
Bolt hook, in.	½x6	⅝x8	⅝x8
Bolt holes	2	3	3
Size holes, in.	$\frac{5}{16}$	⅜	⅜
Wt. per pair, lbs.	2½	3¾	4
Per pair	$2.46	3.46	3.78
Length strap, in.	**14**	**16**	**18**
Width strap, in.	1½	1½	1¾
Bolt hook, in.	¾x10	¾x10	¾x10
Bolt holes	3	3	4
Size holes, in.	⅜	⅜	⅜
Wt. per pair, lbs.	7½	8	9
Per pair	$4.95	5.42	6.42

SCREW HOOK AND STRAP HINGES

STANLEY



No. 951PS—Wrought Steel, Plain

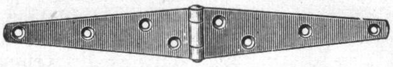
Lgth. strap, in.	**8**	**10**	**12**	**14**
Width strap, in.	1¼	1¼	1¼	1½
Screw hook, in.	½x4	⅝x5	⅝x5	¾x6
Bolt holes	2	3	3	3
Size holes, in.	$\frac{5}{16}$	⅜	⅜	⅜
Wt. per pair, lbs.	2⅞	3	5	7½
Per pair	$1.42	1.85	2.00	2.80

Length strap, in.	**16**	**18**	**24**
Width strap, in.	1½	1¾	2
Screw hook, in.	¾x6	¾x6	⅞x7
Bolt holes	3	4	4
Size holes, in.	⅜	⅜	⅜
Wt. per pair, lbs.	8	9	13½
Per pair	$3.12	3.62	5.25

Above, one pair in a bundle.

STRAP HINGES

LIGHT



No. 900—Wrought Steel, Plain; Without Screws

Length each leaf, in.	**3**	**4**	**5**
Length joint, in.	$1\frac{3}{32}$	$1\frac{3}{16}$	$1\frac{11}{32}$
Screw holes	6	6	8
For screws, Nos.	6	7	8
Wt. doz. prs., lbs.	2⅜	4	6
Per dozen pairs	$3.15	4.20	5.70

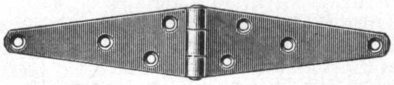
Length each leaf, in.	**6**	**8**
Length joint, in.	$1\frac{9}{16}$	1⅞
Screw holes	8	8
For screws, Nos.	9	10
Wt. doz. prs., lbs.	9	15
Per dozen pairs	$6.60	11.70

3 and 4 in., one dozen pairs; 5, 6 and 8 in., one-half dozen pairs in a box.

No. SC900—Wrought Steel, Plain; One Pair in a Box, With Screws

Length each leaf, in.	**3**	**4**	**5**
Wt. 100 pairs, lbs.	26	40	61
Per 100 pairs	$42.65	52.10	67.70

HEAVY



No. 902—Wrought Steel, Plain; Without Screws

Length each leaf, in.	**4**	**5**	**6**
Length joint, in.	$1\frac{9}{16}$	1¾	$2\frac{7}{16}$
Screw holes	6	8	8
Size screws, Nos.	9	10	11
Wt. doz. pairs, lbs.	6	9½	19
Per dozen pairs	$5.80	7.75	8.55

Length each leaf, in.	**8**	**10**
Length joint, in.	$3\frac{3}{16}$	$3\frac{11}{16}$
Screw holes	8	8
Size screws, Nos.	12	14
Wt. doz. pairs, lbs.	32¾	52¼
Per dozen pairs	$14.65	24.75

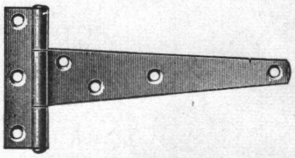
4 and 5 in., one-half dozen pairs in a box; 6 and 8 in., one-quarter dozen pairs; 10 in., one-half dozen pairs in a carton.

No. SC902—Wrought Steel, Plain; One Pair in a Box, With Screws

Length each leaf, in.	**5**	**6**	**8**
Wt. 100 pairs, lbs.	100	172	315
Per 100 pairs	$86.00	97.45	149.00

T HINGES

LIGHT



No. 904—Wrought Steel, Plain; Without Screws

Length strap, in.	**3**	**4**	**5**
Length joint, in.	2⅜	2⅝	3
Width strap at joint, in.	1	$1\frac{1}{16}$	$1\frac{3}{16}$
Screw holes	6	6	7
For screws, Nos.	6	7	8
Wt. doz. prs., lbs.	2¾	3½	4⅞
Per dozen pairs	$3.30	4.20	5.70

Length strap, in.	**6**	**8**
Length joint, in.	3¼	4
Width strap at joint, in.	1¼	1½
Screw holes	7	8
For screws, Nos.	8	10
Wt. dozen prs., lbs.	6¼	14
Per dozen pairs	$7.05	12.20

3 and 4 in., one dozen pairs; 5, 6 and 8 in., one-half dozen pairs in a box.

No. SC904—Wrought Steel, Plain; One Pair in a Box, With Screws

Lgth. strap, in.	**3**	**4**	**5**	**6**
Wt. 100 prs., lbs.	30	38	53	66
Per 100 pairs	$46.00	55.70	70.50	86.00

HEAVY

No. 906—Wrought Steel, Plain; Without Screws

Length strap, in.	**4**	**5**	**6**
Length joint, in.	2⅞	3¼	3½
Wdt. strap at joint, in.	$1\frac{5}{16}$	$1\frac{7}{16}$	$1\frac{9}{16}$
Screw holes	6	7	7
For screws, Nos.	8	8	9
Wt. doz. prs., lbs.	4½	7⅝	9
Per dozen pairs	$6.60	7.75	8.55
Length strap, in.	**8**	**10**	**12**
Length joint, in.	3⅞	4½	5½
Wdt. strap at joint, in.	$1\frac{11}{16}$	$1\frac{13}{16}$	2¼
Screw holes	7	8	9
For screws, Nos.	10	11	12
Wt. doz. prs., lbs.	12	20	33
Per dozen pairs	$13.35	20.20	35.80

4 to 8 in., one-half dozen pairs; 10 and 12 in., one-quarter dozen pairs in a box.

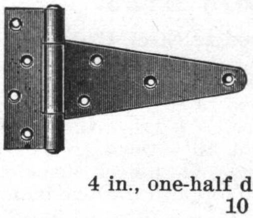
No. SC906—Wrought Steel, Plain; One Pair in a Box, With Screws

Length strap, in.	**6**	**8**
Wt. 100 pairs, lbs.	86	122
Per 100 pairs	$103.30	129.65

T HINGES

EXTRA HEAVY

No. 908—Wrought Steel Plain, Without Screws



Length strap, in.	**4**	**6**	**8**	**10**	**12**
Length joint, in.	3½	4½	5½	7	7¾
Width strap at joint, in.	1⅝	2⅜	2⅞	3½	$4\frac{7}{16}$
Screw holes	6	8	9	9	10
For screws, Nos.	9	11	12	14	16
Wt. doz. prs., lbs.	7¾	21¼	37	58	78
Per dozen pairs	$17.60	28.65	44.65	72.10	141.35

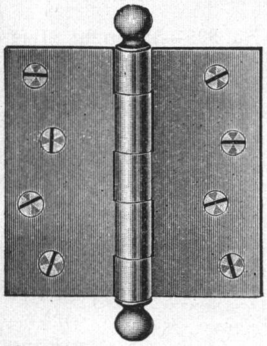
4 in., one-half dozen pairs in a box; 6 and 8 in., one-quarter dozen pairs; 10 and 12 in., one-half dozen pairs in a carton.

No. SC908—Wrought Steel, Plain; One Pair in a Box, With Screws

Length strap, in.	**6**	**8**	**10**	**12**
Wt. 100 pairs, lbs.	204	350	540	720
Per 100 pairs	$119.45	179.55	273.25	499.00

LOOSE PIN BUTT HINGES

REGULAR WEIGHT, PLAIN BEARING



Wrought Steel, Planished, Ball Tips

5 knuckles, Non-rising pin.

No. 241-F—Dull Brass

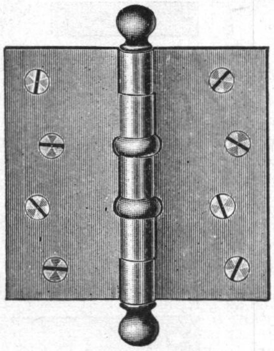
Size, in.	2x2	2½x2½
Screw holes	4	6
Size screws, Nos.	7	8
Wt. 100 pairs, lbs.	33	53
Per 100 pairs	$92.00	94.00

Size, in.	3x3	3½x3½	4x4
Screw holes	6	6	8
Size screws, Nos.	8	9	10
Wt. 100 pairs, lbs.	79	135	178
Per 100 pairs	$96.00	98.00	131.00

2x2 and 2½x2½ in., three pairs; larger sizes, one pair in a box, with screws.

LOOSE PIN BUTT HINGES

REGULAR WEIGHT, BALL BEARING



5 knuckles. Non-rising pin. Equipped with two non-detachable ball bearings.

Wrought Steel, Planished, Ball Tips
No. BB241-F— Dull Brass

Size, in.	3½x3½	4½x4½
Screw holes	6	8
Size screws, Nos.	9	10
Wt. pair, lbs.	1⅜	2¼
Per pair	$3.65	5.80

No. BB241-KL—Zinc Plated, Buffed

Size, in.	3½x3½	4½x4½
Per pair	$4.50	6.80

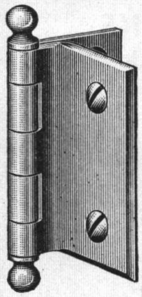
Wrought Steel, Button Tips
No. BB242—Primed for Painting

Size, in.	3½x3½	4½x4½
Screw holes	6	8
Size screws, Nos.	9	10
Wt. pair, lbs.	1 5/16	2 3/16
Per pair	$3.75	5.90

One pair in a box.

LOOSE PIN BUTT HINGES

REGULAR WEIGHT, HALF SURFACE



Wrought Steel, Planished, Ball Tips

Reversible, 5 knuckles.

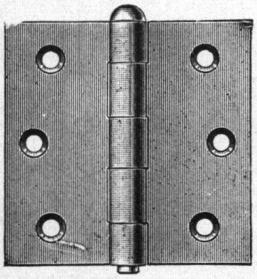
No. 165-F—Dull Brass

Length joint, in.	2	2½	3
Screw holes	5	6	6
Size screws, Nos.	7	8	8
Wt. 100 prs., lbs.	27	47	90
Per 100 pairs	$83.15	141.35	150.80

Length joint, in.	3½	4
Screw holes	6	8
Size screws, Nos.	9	10
Wt. 100 pairs, lbs.	153	199
Per 100 pairs	$160.00	229.45

2 and 2½ in., three pairs; larger sizes, one pair in a box, with screws.

REGULAR WEIGHT, BROAD



Wrought Steel; Oval Tip

5 knuckles.

No. 804—Plain Steel; Without Screws

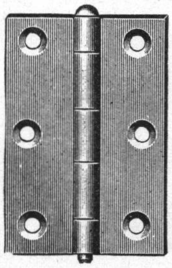
Size, in.	2x2	2½x2	2½x2½
Screw holes	4	6	6
For screws, Nos.	7	8	8
Wt. doz. pairs, lbs.	3	4¼	5
Per dozen pairs	$4.70	5.10	5.10

Size, in.	3x3	3½x3½
Screw holes	6	6
For screws, Nos.	8	9
Wt. dozen pairs, lbs.	7	11
Per dozen pairs	$5.30	6.05

2x2, 2½x2 and 2½x2½ in., one dozen pairs; balance, one-half dozen pairs in a box.

LOOSE PIN BUTT HINGES

LIGHT WEIGHT, NARROW



Wrought Steel

1 to 2 in. sizes have three knuckles; larger sizes have five.

No. 840—Plain Steel; Without Screws

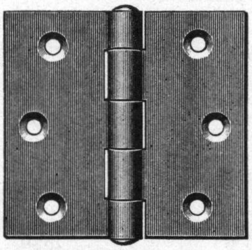
Length, in.	1	1¼	1½	1¾
Width open, in.	1 3/16	1⅜	1½	1 9/16
Screw holes	4	4	4	4
For screws, Nos.	5	6	6	6
Wt. doz. prs., lbs.	⅝	1	1¼	1¾
Per dozen pairs	$1.26	1.52	1.90	2.10

Length, in.	2	2½	3
Width open, in.	1 11/16	1⅞	2 3/16
Screw holes	4	6	6
For screws, Nos.	7	7	8
Wt. doz. prs., lbs.	2⅛	3⅛	4⅜
Per dozen pairs	$2.25	2.60	3.64

One dozen pairs in a box.

FAST PIN BUTT HINGES

REGULAR WEIGHT, BROAD



Wrought Steel

5 knuckles.

No. 808—Plain Steel; Without Screws

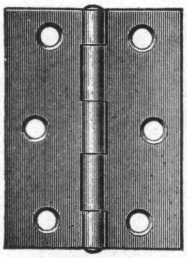
Size, in.	2x2	2½x2	2½x2½
Screw holes	4	6	6
For screws, Nos.	7	8	8
Wt. doz. prs., lbs.	3	4¼	5
Per dozen pairs	$4.50	5.00	5.00

Size, in.	3x3	3½x3½
Screw holes	6	6
For screws, Nos.	8	9
Wt. doz. prs., lbs.	7	11
Per dozen pairs	$5.20	5.65

2x2, 2½x2 and 2½x2½ in., one dozen pairs; balance, one-half dozen pairs in a box.

FAST PIN BUTT HINGES

LIGHT WEIGHT, NARROW



Wrought Steel

1 to 2 in. sizes have three knuckles; larger sizes have five.

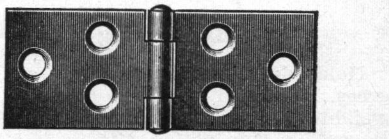
No. 838—Plain Steel; Without Screws

Length, in.	1	1¼	1½	1¾
Width open, in.	1 3/16	1⅜	1½	1 9/16
Screw holes	4	4	4	4
For screws, Nos.	5	6	6	6
Wt. doz. prs., lbs.	⅝	1	1¼	1¾
Per dozen pairs	$1.20	1.45	1.84	2.00

Length, in.	2	2½	3
Width open, in.	1 11/16	1⅞	2 3/16
Screw holes	4	6	6
For screws, Nos.	7	7	8
Wt. doz. prs., lbs.	2⅛	3⅛	4⅜
Per dozen pairs	$2.10	2.42	3.36

One dozen pairs in a box.

BACK FLAP HINGES



Wrought Steel, Fast Pin
No. 814—Plain Steel, Without Screws

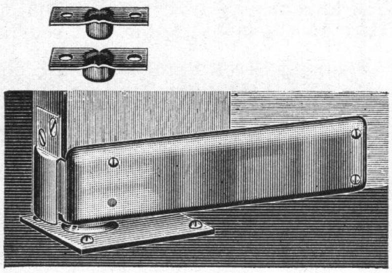
Length joint, in.	1	1¼
Width open, in.	2⅞	3¼
Screw holes	6	6
For screws, Nos.	6	7
Wt. doz. prs., lbs.	1½	2¼
Per dozen pairs	$2.80	3.40

Length joint, in.	1½	2
Width open, in.	3 7/16	4⅜
Screw holes	6	6
For screws, Nos.	8	8
Wt. doz. prs., lbs.	2¾	4⅞
Per dozen pairs	$4.40	6.70

One dozen pairs in a box.

FLOOR SPRING HINGES

STANLEY, DOUBLE ACTING



Ball Bearing

Holds door open when swung to 90 degrees. Hardened steel bearings carry weight of door and absorb spring thrust. Cam welded to floor plate. Reversible side plates.

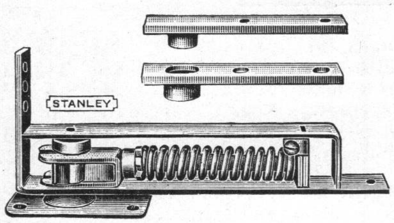
Heavy cold rolled steel frame, drop-forged, accurately machined and hardened cam, malleable iron fork with hardened bearing surfaces, oil tempered steel wire spring.

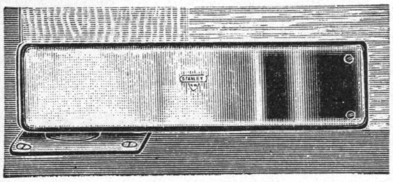
Wrought Steel Plates

Side plates 7$\frac{11}{16}$x1$\frac{13}{16}$ in., floor plate 3⅜x 2¾ in., requires 6⅞x1⅛ in. mortise. For doors 1⅛ to 1¾ in. thick.

	Per set
No. 155-F—Dull brass, for wood floors; wt. per set 2½ lbs.	$3.85

One set in a box, with screws.





Ball Bearing

Holds door open at an angle of 90 degrees. Hardened steel ball bearings carry weight of door and take spring thrust. Reversible side plates.

Alignment of door can be adjusted with a screw driver after door is in place. Tension of spring can be adjusted to suit requirements.

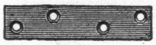
Wrought Steel Plates

Side plates 9¾x2$\frac{9}{16}$ in., floor plate 3¾x3 in. For doors 1⅜ to 1¾ in. thick.

	Per set
No. BB157-F—Dull brass; for wood floors; wt. per set 3½ lbs.	$5.45

One set in a box, with screws.

MENDING PLATES

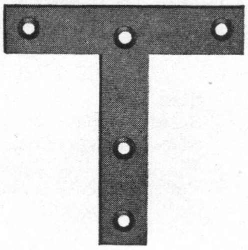


No. 995—Wrought Steel; Plain; Without Screws

Length, in.	3	4	6
Width, in.	¾	⅞	1⅛
Screw holes	4	4	4
For screws, Nos.	7	8	9
Wt. gross, lbs. ...	8¾	14¾	33⅝
Per gross	$7.45	10.65	16.85

One-sixth gross in a box.

T PLATES

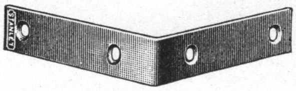


No. 995½—Wrought Steel, Plain; Without Screws

Length sides, in.	3x3	4x4
Width, in.	⅝	¾
Screw holes	5	5
For screws, Nos.	8	8
Wt. gross, lbs.	10¾	18⅝
Per gross	$18.25	25.00

One-sixth gross in a box.

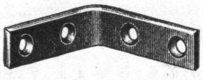
CORNER IRONS



No. 996—Wrought Steel, Plain; Without Screws

Width, in.	¾	1	1½
Length sides, in.	4½	4½	4½
Screw holes	4	4	8
For screws, Nos.	9	9	9
Wt. gross, lbs. ..	23	31	47
Per gross	$18.15	19.60	27.25

One-sixth gross in a box.



No. 997—Wrought Steel, Plain; Without Screws

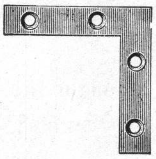
Length sides, in..	1	1½	2
Width, in.	½	½	⅝
Screw holes	2	4	4
For screws, Nos..	6	6	8
Wt. gross, lbs. ...	3⅛	5⅜	10⅜
Per gross	$3.70	4.65	5.65

Length sides, in..	2½	3	4
Width, in.	⅝	¾	⅞
Screw holes	4	4	4
For screws, Nos..	8	9	10
Wt. gross, lbs. ..	14¼	23½	42¾
Per gross	$7.90	10.35	19.20

Length sides, in.	5	6
Width, in.	1	1⅛
Screw holes	6	6
For screws, Nos.	11	12
Wt. gross, lbs.	73⅜	103⅜
Per gross	$26.60	36.00

1 to 3 in., one-sixth gross; 4 to 6 in., one-twelfth gross in a box.

CORNER IRONS



No. 999—Wrought Steel, Plain; Without Screws

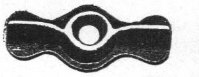
Length sides, in..	2	2½	3
Width, in.	⅜	½	⅝
Screw holes	4	4	4
For screws, Nos.	5	6	6
Wt. gross, lbs. ..	3⅝	6⅜	10¼
Per gross	$4.75	5.40	7.15

Length sides, in.	3½	4
Width, in.	⅝	¾
Screw holes	4	4
For screws, Nos.	8	8
Wt. gross, lbs.	11⅞	17⅝
Per gross	$7.45	8.80

Length sides, in.	5	6
Width, in.	⅞	1
Screw holes	4	6
For screws, Nos.	8	9
Wt. gross, lbs.	24	36¾
Per gross	$14.25	19.45

One-sixth gross in a box.

DOOR BUTTONS



Wrought Steel

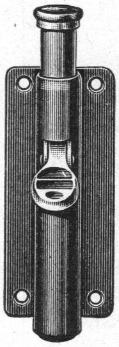
Length 1¾ in.

Without Screws

	Per gross
No. 4-J—Japanned; wt. per gross 1⅞ lbs.	$2.60

One gross in a box.

FOOT BOLTS



Wrought Steel, Positive Action

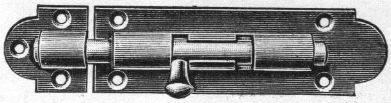
Bolt need not be thrown to extreme position before it will hold; will hold in any position.

Japanned

	Per dozen
No. 1057-J—6 in. long, 5x2 in. case; ¾ in. throw; wt. per dozen 9 lbs.	$14.30

One-half dozen in a box, with screws.

BARREL BOLTS



Wrought Steel, Light

No. 1078-J—Japanned; brass plated bolt, without screws.

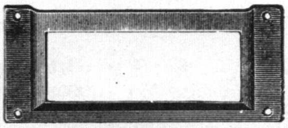
Length, in.	2½	3	4
Plate, in.	2½x1	3x1⅛	4x1⅛
Wt. dozen, lbs. ..	1½	2¼	3
Per dozen	$2.75	3.10	3.60

Length, in.	5	6
Plate, in.	5x1$\frac{5}{16}$	6x1$\frac{5}{16}$
Wt. dozen, lbs.	5¼	6
Per dozen	$4.85	6.00

One dozen in a box.

CARD HOLDERS

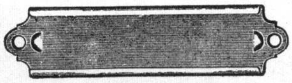
WROUGHT BRASS



Dipped and Lacquered

Nos.	4696	2879	390
Card size, in.	½x2½	1x2⅝	1¼x2⅞
Wt. gross, lbs.	1½	2¾	3
Per gross	$8.60	10.50	13.55

One gross in a box, without pins.

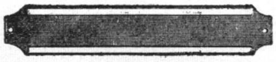


Dipped and Lacquered

Nos.	13662	5754	2804
Card size, in.	⅝x1⅝	⅝x2⅜	⅝x3¼
Wt. gross, lbs.	¾	1½	2
Per gross	8.25	10.50	11.90

Nos.	209	211
Card size, in.	¾x1⅝	¾x2¾
Wt. gross, lbs.	1	1¾
Per gross	$8.55	9.90

One gross in a box, without pins.



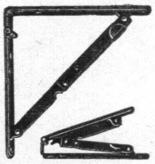
Dipped and Lacquered

Nos.	207	87
Card size, in.	7/16x1⅝	7/16x2⅜
Wt. gross, lbs.	⅝	⅞
Per gross	$6.80	8.10

Nos.	86	1062
Card size, in.	7/16x2¾	7/16x3⅝
Wt. gross, lbs.	1⅛	1⅜
Per gross	$7.50	11.25

One gross in a box, without pins.

SHELF BRACKETS



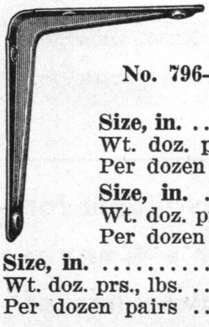
Wrought Steel, Folding

For use where a shelf is desired that can be dropped down out of the way when not in use. Locks automatically when open.

No. 794-J—Japanned

Size, in.	8x8	12x12	16x16
Wt. doz. prs., lbs.	14	29¾	47½
Per dozen pairs	$33.25	49.90	83.15

One pair in a box, with screws.



Wrought Steel

No. 796—Japanned; Without Screws

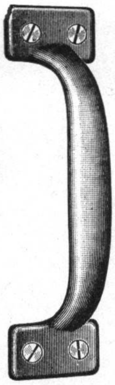
Size, in.	4x5	5x6
Wt. doz. prs., lbs.	2⅜	4
Per dozen pairs	$3.90	4.95

Size, in.	6x8	8x10
Wt. doz. prs., lbs.	7¼	13
Per dozen pairs	$6.65	8.95

Size, in.	10x12	12x14
Wt. doz. prs., lbs.	16½	24½
Per dozen pairs	$13.25	20.75

4x5 in., one dozen pairs; 5x6 and 6x8 in., one-half dozen pairs; larger, one-quarter dozen pairs in a box.

DOOR PULLS



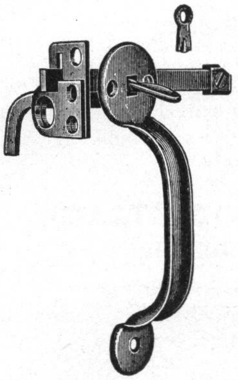
No. 482-J—Wrought Steel, Japanned

Size, Nos.	2	3	4
Length, in.	5¾	6½	7⅞
Width, in.	1½	1¾	2¼
Wt. dozen, lbs.	2	3	6¼
Per dozen	$2.60	2.85	9.25

Size Nos. 2 and 3, one dozen; No. 4, one-half dozen in a box, with screws.

THUMB LATCHES

RIM



For doors of residence, garage, barns, etc.

With padlock attachment.

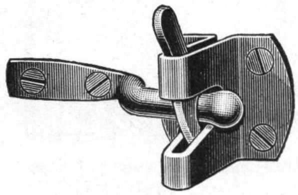
No. 1260-J—Wrought Steel, Japanned

Size, Nos.	2	3	4
Lgth. handle, in.	6¾	7½	8⅞
Latch bar, in.	4½	5½	5½
For doors, in.	⅝–1¾	¾–1⅞	1–2⅝
Wt. dozen, lbs.	6	9	14½
Per dozen	$9.45	13.35	23.25

One in a box, with screws.

GATE LATCHES

S-W GRAVITY



Extra Heavy Wrought Steel, Zinc Plated and Buffed

For latching single acting gates. Self-latching and released by simply raising the trip. Gate and post must be flush.

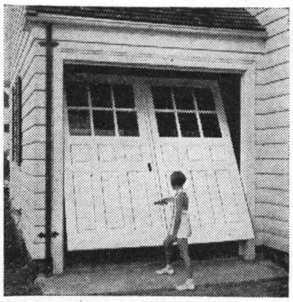
Also recommended for cellar and hatchway doors.

	Per dozen
No. SC1261-K—1¾x2 in. base, bar 4½ in. long; 2 in. projection; wt. per dozen 6 lbs.	$9.65

One-half dozen in a box, with screws.

GARAGE DOOR HARDWARE SETS

STANLEY "ECON-O-MATIC" SWING-UP



Outside view, door partly open.

For New or Old Doors

Designed on the pivot principle, door swinging outward at bottom and inward at top, in an arc upward to an overhead position inside garage when fully open. When door is in full open position it rests on horizontal tracks fastened to jambs and supported at rear by braces attached to ceiling or rafters. The door does not protrude beyond front of opening when in open position. Angle iron lifting arm propelled by special heat-treated and oil tempered coil springs, furnish the power in opening.

Operation is practically automatic, it being necessary only to unlock door if locked, turn the outside handle and step back. Door will then float open smoothly and easily to a full open position against bumpers at rear of tracks, without slam or jar. Operates about the same from inside when locking lever is pushed up, and inside handle turned.

Steel plates are provided at side jambs to assure a good weather-tight fit. A wood stop is used at the outside for the same purpose and a rabbetted sill is recommended at bottom.

Angle iron braces at top and bottom serve to make two sections into a one-piece door (if door is not so made), also serve to prevent sagging. Set requires only 1⅝ in. headroom above opening with 2½ in. minimum sideroom each side.

Complete with rim cylinder locking bolt and two keys. Black japanned finish.

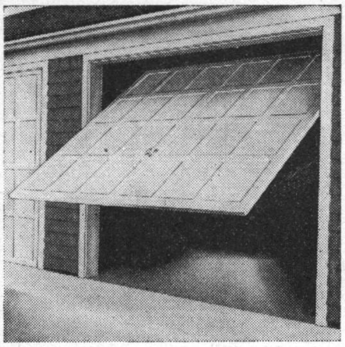
Hardware Only, for One Door

	Per set
No. 2731½—For use on doors up to 8 ft. wide and 6 ft. 6 in. to 7 ft. high, weighing not over 150 pounds; wt. per set 71 lbs.	$35.00

One set in a carton.

GARAGE DOOR HARDWARE SETS

STANLEY "SWING-UP"



Outside view, door partly open.

For New or Old Garage Doors

Operate on the pivot principle, door swinging outward at bottom and inward at top, in an arc upward to an overhead position inside garage when fully open. When door is in full open position it rests on horizontal tracks fastened to jambs and supported at rear by braces attached to ceiling or rafters. The door does not protrude beyond front of opening when in open position. Angle iron lifting arm propelled by special heat-treated and oil-tempered coil springs, furnish the power in opening.

Operation is practically automatic, it being necessary only to unlock door if locked, turn the outside handle and step back. Door will then float open smoothly and easily, to a full open position against bumpers at rear of tracks, without slam or jar. Operates about the same from inside when locking lever is pushed up, and inside handle turned.

Angle iron braces at top and bottom serve to make two sections into a one-piece door (if door is not so made), also serve to prevent sagging.

Heavy, heat-treated and oil-tempered coil springs, one for each side of door. Wrought steel housings; 13 gauge wrought steel track so designed as to prevent the rollers from jumping out. Steel plates attached to hanger brackets offer protection against the weather and also act as a side stop. Upper and lower door braces are adjustable for door 7 ft. to 8 ft. in width.

Only 2 in. headroom required above top of door. Doors should be ¾ in. less in height and width than the opening to allow ⅜ in. clearance on all sides.

Japanned finish, cadmium plated spindles, adjusting bolts, handle of locking bolt, screws and bolts.

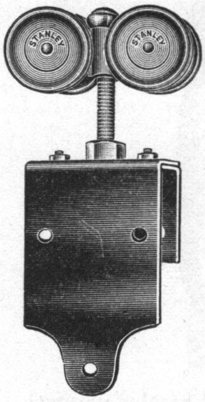
Hardware Only, For One Door

Per set

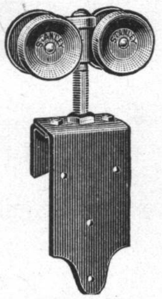
No. 2732—For door 7 to 8 ft. wide and 7 to 8 ft. high, up to 1¾ in. thick, not to exceed 200 lbs. per opening; wt. per set 116 lbs. ..$53.20

One set in a crate.

SLIDING DOOR HANGERS



No. X2650



No. Y26501

Lateral and Vertical Adjustments

Steel roller bearing wheels, ball bearing swivel, japanned with cadmium plated trolley.

For Use in No. X2641 Track

Per pair

No. X2650—2⅛ in. diameter wheels, 5½x3¼ in. long apron, 2⅜x3¼ in. short apron, for doors 1⅝ to 2¼ in. thick, weighing up to 350 lbs.; wt. per pair 5 lbs. $7.10

For Use in No. Y2641 Track

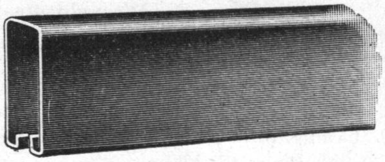
Per pair

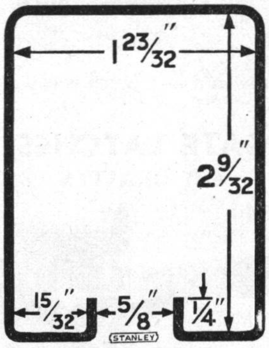
No. Y2650-1—3 in. diameter wheels, $7\frac{11}{16}$x4 in. long apron, $2\frac{15}{16}$x4 in. short apron, for doors 1⅝ to 2¼ in. thick, weighing up to 700 lbs.; wt. per pair 13 lbs. ..$12.30

One pair in a box, with stove and carriage bolts.

SLIDING DOOR TRACK

S-W TROLLEY





Reduced size cross sections of No. X2641 track.

Wrought Steel, Japanned

In 4, 6, 8 and 10 ft. lengths.

Per 100 feet

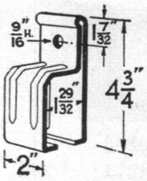
No. X2641—16 gauge; inside dimensions $2\frac{9}{32}$x$1\frac{23}{32}$ in., for doors weighing up to 350 lbs.; wt. per 100 feet 175 lbs. $53.00

No. Y2641—14 gauge; inside dimensions 3¼x$2\frac{3}{16}$ in., for doors weighing up to 700 lbs.; wt. per 100 feet 312 lbs. 66.55

Open stock.

TRACK BRACKETS

S-W TROLLEY



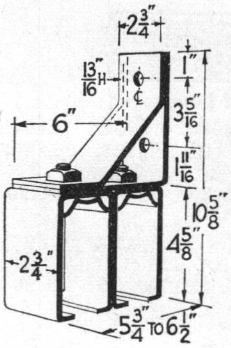
For Use with No. X2641 Track

Wrought steel, japanned.

Each

No. X2650-C—Center side bracket; wt. each ¾ lb. $0.53

Open stock.



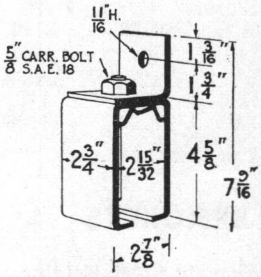
For Use With No. Y2641 Track

Wrought steel, japanned.

Each

No. Y2651D—Double center side bracket; wt. each 4 lbs. $1.65

Open stock.



For Use With No. Y2641 Track

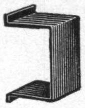
Wrought steel, japanned.

Each

No. Y2610C—Center side bracket; wt. each 1½ lbs. $1.25

Open stock.

END CAPS



Fits into the bracket at end of track thereby making the track bird proof.

Each

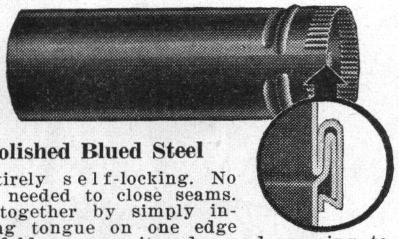
No. X2641EC—For No. X2641 track $0.14

No. Y2641EC—For No. Y2641 track . .40

We also have available for our Customer's Convenience a Complete line of Stanley Tools

STOVE PIPE

SNAPLOK, NESTED



Polished Blued Steel

Entirely self-locking. No tools needed to close seams. Put together by simply inserting tongue on one edge into fold on opposite edge and pressing together until it snaps. Joint can be cut to any length without destroying the lock.

Made from high grade sheet steel, uniform color.

Full Joints, 24 in. Long

No. 28 Gauge

Size, in.	3	4	5
Wt. 100 joints, lbs.	106	140	173
Per 100 joints	$37.90	38.90	40.40

Size, in.	6	7
Wt. 100 joints, lbs.	205	238
Per 100 joints	$41.90	45.90

Twenty-five joints in a drum.

STOVE PIPE ELBOWS

CORRUGATED

Blued

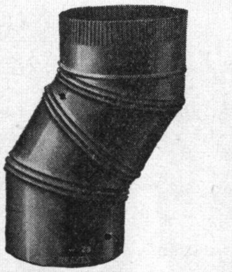
One-piece construction, lock-seamed for strength and to prevent coming apart.

Polished blued steel finish, 2½ in. ends.

No. 28 Gauge

Size, in.	3	4	5	6	7
Wt. doz., lbs.	5	8	12	16	21
Per dozen	$4.40	4.50	4.60	4.70	5.40

ADJUSTABLE



Blued

Rounded double seams permit each section to turn freely without any danger of becoming disconnected. Can quickly be adjusted to any angle between a straight line and a right angle.

Polished blued steel finish, 2 inch ends.

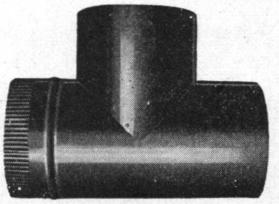
No. 28 Gauge

Size, in.	3	4	5	6	7
Wt. doz., lbs.	4	7	11	13	17
Per dozen	$5.50	5.60	5.70	5.80	6.50

Above, one dozen in a bundle.

STOVE PIPE TEE JOINTS

ASSEMBLED



Blued Steel

Shipped ready for use, with all seams closed and stub end securely riveted.

3 in. stub.

No. 28 Gauge; 12 in. Long

Size, in.	6x6x6
Wt. dozen, lbs.	20
Per dozen	$7.54

One dozen in a carton.

STOVE PIPE REDUCERS

STYLE "A", OVAL

One-Piece

Made in one piece and specially shaped to assure a perfect fit. Each end designed to conform exactly to the joint or collar it meets.

Uniform color blue steel.

No. 28 Gauge

	Per dozen
No. A—7x6 in.; wt. per doz. 10 lbs.	$4.36

One dozen in a carton.

STYLE "C", ROUND

Two-Piece

Uniform color blue steel.

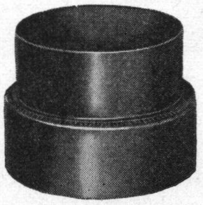
No. 28 Gauge

	Per dozen
No. C—7x6 in.; wt. per doz. 8 lbs.	$5.72

One dozen in a carton.

FLUE INCREASERS

STYLE "D", ROUND



Two-Piece

Uniform color blue steel.

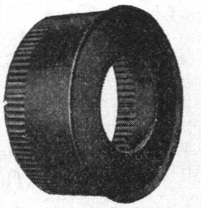
No. 28 Gauge

	Per dozen
No. D—6x7 in.; wt. per dozen 8 lbs.	$5.72

One dozen in a carton.

FLUE REDUCERS

STYLE "E"



Specially shaped to assure a perfect fit.

Uniform color blue steel.

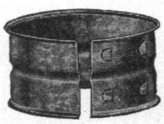
No. 28 Gauge

Size, in.	6x3	6x4	6x5
Wt. dozen, lbs.	6½	6	5
Per dozen	$4.66	4.66	4.66

One dozen in a carton.

FLUE THIMBLES

ADJUSTABLE



Galvanized

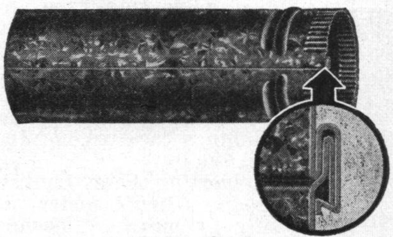
Flanged on both edges and swedged thru center. No rivets — cannot collapse.

	Per dozen
No. 467—For 6 and 7 in. flues, 4 in. deep; wt. per dozen 6 lbs.	$2.06

One dozen in a carton.

FURNACE PIPE

SNAPLOK, NESTED



Galvanized

Put together by simply inserting tongue on one edge into fold on opposite edge and pressing together until it snaps.

24 in. Joints

No. 28 Gauge

Size, in.	Per 100 joints	Wt. per 100 joints, lbs.
3	$ 50.00	136
4	64.00	178
5	76.00	218
6	88.00	259
7	104.00	300
8	116.00	340
9	128.00	380
10	140.00	421
12	170.00	502

3 to 7 in., twenty-five joints; 8 to 12 in., ten joints nested in a bundle.

FURNACE PIPE ELBOWS

ADJUSTABLE

4-Piece, Galvanized

Perfectly rounded double seams permit each section to turn freely without any chance of becoming disconnected. Can be quickly and easily adjusted to any angle between a straight line and a right angle.

No. 28 Gauge

Size, in.	3	4	5	6	7
Wt. doz., lbs.	5	9	13	16	20
Per dozen	$15.64	18.72	21.60	23.76	26.40
Size, in.	8	9	10	12	
Wt. dozen, lbs.	24	28	33	44	
Per dozen	$29.28	32.16	35.76	43.68	

One dozen in a bundle.

FURNACE PIPE ANGLES

45 DEGREE

Two-Piece, Galvanized

Two-piece construction, ends turn freely without becoming disconnected.

No. 28 Gauge

Size, in.	6	7
Wt. dozen, lbs.	9	11
Per dozen	$19.44	20.88

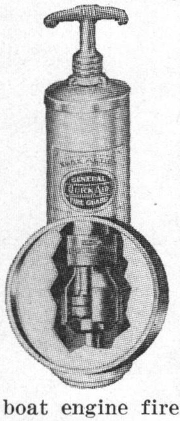
Size, in.	8	9	10	12
Wt. dozen, lbs.	13	15	19	24
Per dozen	$22.32	23.76	25.92	30.96

One dozen in a bundle.

FIRE EXTINGUISHERS

QUICK AID

Vapo-Liquid Type



A fine quality utility fire extinguisher of small, handy size yet very effective against any type fire.

Equipped with "Sure-Action" corrosion arrestor and patented "Safety-Phlare."

Liquid is non-freezing, a non-conductor of electricity and fast vaporizing.

Excellent for use on either Class A, B, C or D fires; wood and rubbish, oils and greases, electrical or automotive and boat engine fires.

Fully charged with liquid. Carry Underwriters' label.

Nos.	Each	Cap., qts.	Finish	Wt. each, lbs.
	With Standard Bracket			
85HD	$19.00	1	Brass	8
85HD-C	22.00	1	Chrome	8
95HD	22.00	1½	Brass	10
95HD-C	26.00	1½	Chrome	10
	With Truck Bracket			
85HD-T	$20.00	1	Brass	8
95HD-T	23.00	1½	Brass	10

Six in a carton.

Soda-Acid Type

Very well made; patented "Sure-Sweat" seam offers added strength at joints.

For use on Class A fires in hotels, offices, apartment buildings, theatres, hospitals, etc.

Inverting the extinguisher produces liquid under pressure by means of chemical reaction. Used on any wood, textile, rubbish or similar fire. Complete with charge. Carry the Underwriters' label. 24 in. high.

Each

No. SA303—Polished copper, 2½ gal. size, charged wt. each 36½ lbs.; ship. wt. each 18 lbs. $38.00

No. SA303-C—Chrome plated 44.00

One in a carton.

Foam Type

Especially well made; patented "Sure-Sweat" seams affords added strength at joints.

For use on Class A, B or D fires in offices, hospitals, apartments, garages and similar establishments.

Inverting the extinguisher produces up to 22 gallons of fire-smothering foam which forms a durable blanket over burning surfaces.

Can be used on any fire except electrical fires, unless current is turned off or voltage is low, since stream is an electrical conductor, although a poor one. Complete with charge. Carry Underwriters' label. 24 in. high.

Each

No. F833—Polished copper, 2½ gal. size; charged wt. each 39½ lbs.; ship. wt. each 21 lbs. $41.00

No. F833-C—Chrome plated 47.00

One in a carton.

FIRE EXTINGUISHERS

QUICK-AID

Water Pump Type

For fires in wood, paper, textiles, etc. Recommended for use in unheated buildings or open yards. Will not freeze at 40° below zero when used with anti-freeze charge. Does not require annual recharging.

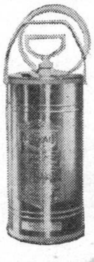
Has all brass, non-corrosive double-acting pump; with patented "Safety - Phlare." Extinguisher constructed of first grade cold rolled copper. Carry Underwriters' label.

24½ in. high.

Each

No. A704—Polished copper; 2½ gal. size, without charge; ship. wt. each 12 lbs. $41.00

One in a carton.



Water Pump Type

For use in unheated buildings or outside locations against fires in wood, paper, textiles and other Class "A" hazards.

Meets Forestry requirements for mobile equipment in wooded areas.

All-brass double-acting pump; with patented "Safety-Phlare."

Carry Underwriters' label.

24½ in. high.

Each

No. P909C—Copper tank, 5 gal. size, without charge; ship. wt. each 14 lbs. $45.00

No. P909—Steel tank, 5 gal. size, without charge; ship. wt. each 14 lbs. 34.00

One in a carton.

Knapsack Type

For grass and brush fires, and fires in wood, paper, textiles, etc.

Can be carried as a knapsack. Allows operator free use of both hands.

All-brass telescope pump throws a steady stream of water up to 50 ft. Straight stream or water for nozzle.

Special features include concave form-fitting back for comfort, combination handle and carrying bracket centered at top of tank, detachable carrying straps, patented "Safety-Phlare," large filler opening, leakproof brass screw top secured by chain, and screen filter in filler opening to prevent foreign matter from clogging pump.

Without Charge

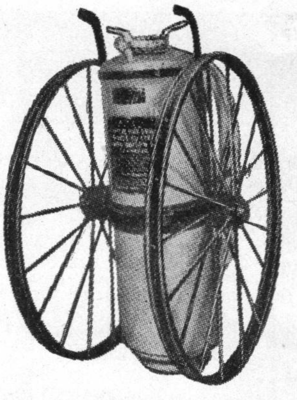
Each

No. K-221—Steel tank, 5 gal. size, 13½ in. high by 13¾ in. wide; ship. wt. each 13 lbs. $34.00

One in a carton.

FIRE EXTINGUISHERS

QUICK-AID SODA-ACID ENGINE



No. SA340-I—Indoor Type

Especially suitable for warehouses, institutions, factories and large buildings. Designed for use on wood, paper, textiles, alcohol, acetone and other Class "A" fires. Effective at distances 40-60 feet from nozzle.

Equipped with 50 feet of heavy-duty chemical hose and shot-off nozzle. Shipped complete with charge.

40 Gallon Capacity

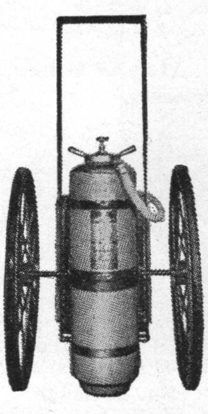
Each

No. SA340-I—Indoor type; ship. wt. each 600 lbs. $630.00

No. SA340-O—Outdoor type; ship. wt. each 625 lbs. 685.00

Open stock.

QUICK-AID FOAM ENGINE



No. F840-O—Outdoor Type

Generates about 300 gallons of cooling and blanketing foam. Has an effective range of 40 to 60 feet from nozzle.

For use on fires in gasoline, oils, paints, flammable liquids, etc., as well as wood, paper and textiles.

Equipped with 50 feet of heavy-duty chemical hose with shut-off nozzle. Shipped complete with charge.

40 Gallon Capacity

Each

No. F840-I—Indoor type; ship. wt. each 650 lbs. $675.00

No. F840-O—Outdoor type; ship. wt. each 675 lbs. 725.00

No. F840-A—Airport type; ship. wt. each 700 lbs. 750.00

Open stock.

Note—See next page for Fire Extinguisher Recharges.

FIRE EXTINGUISHERS

GENERAL C-D SNO-FOG

No. 2½AKS

Carbon Dioxide Type

Actually seem to "Freeze" fire. The carbon dioxide discharge of C-D Sno-Fog kills fire in a few seconds by penetrating to every corner where fire exists, excluding and replacing oxygen necessary to combustion.

Effective on oil, electrical, gasoline, grease, flammable liquid, paint, lacquer and illuminating gas fire.

Complete with charge and wall hanging bracket.

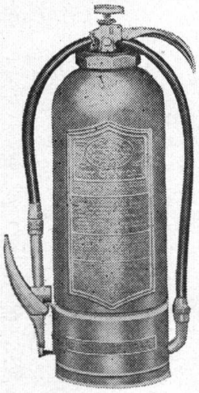
Nos.	Each	Size, lbs.	Underwriter classification	Height, in.	Hose	Ship. wt. each, lbs.
2½AKS	$ 22.00	2½	B2, C2	17⅝	Swivel	12
5AKS	29.00	5	B2, C2	22	Swivel	20
10AK	48.00	10	B2, C1	23	3 ft.	37
15AK	55.00	15	B1, C1	29⅜	3 ft.	47
20AK	62.00	20	B1, C1	32¼	3 ft.	62
50A	178.00	50	B1, C1	....	15 ft.	285
75A	218.00	75	B1, C1	....	25 ft.	340
100A	350.00	100	B-C	....	40 ft.	440

One in a box.

Note—Nos. 50A, 75A and 100A are wheeled portable models.

Note—Carbon Dioxide Extinguishers recharged promptly at nominal charge.

QUICK AID DRY CHEMICAL



Portable Hand Type

A powerful, remarkably efficient, carbon dioxide type extinguisher for on-the-spot recharging. Underwriters approved and especially recommended for gasoline, oil, chemical and electrical fires. Equally useful indoors or out.

Complete with charge and hanging bracket.

Each

No. DC-620—20 lb. capacity; shipping wt. each 50 lbs. $59.00

One in a box.

Recharges For No. DC-620

Free-flowing. No special tools needed for recharging.

In durable moisture-proof containers.

Nos.	**CDC-25**	**CDC-50**
Size, lbs.	25	50
Each	$6.50	13.00

FIRE EXTINGUISHER RECHARGES

QUICK AID

Vapo-Liquid Type

Nos.	**VL60**	**VL65**	**VL70**
Size	1 qt.	1 gal.	55 gal. drum
No. in case	12	3	...
Wt. case, lbs.	46	46	770
Each	$1.90	6.80	317.00

Soda-Acid Type

Nos.	**SA51**	**SA52**	**SA53**
Size, gal.	2½	20	40
No. in case	12	1	1
Wt. case, lbs.	31	20	40
Each	$0.90	8.10	10.80

Foam Type

Nos.	**FC21**	**FC22**	**FC23**
Size, gal.	2½	20	40
No. in case	12	1	1
Wt. case, lbs.	58	39	77
Each	$2.00	14.00	20.00

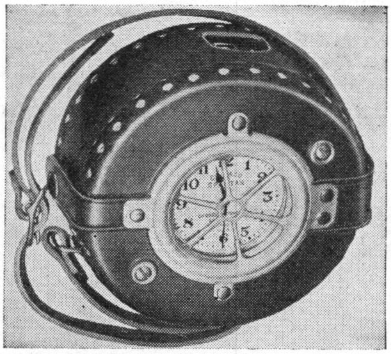
Anti-Freeze

Will not freeze at 40° below zero.

Nos.	**AC41**	**PC42**
Size, gal.	2½	5
No. in case	6	1
Wt. case, lbs.	65	22
Each	$2.20	4.40

WATCHMEN'S CLOCKS

CHICAGO MINUTEMAN



Records a Total of 40 Stations

Will record 20 stations in one line on dial record sheet. Twenty additional stations can be registered in a second line. A dot over each figure distinguishes them from registrations of first 20 stations.

Approved by Underwriters' Laboratories, Inc., and the Factory Mutuals Laboratories. Recommended by insurance authorities in every state.

Each

MinuteMan Clock—Complete, 6 in. diam.; wt. each 3½ lbs. $75.00

One in a box.

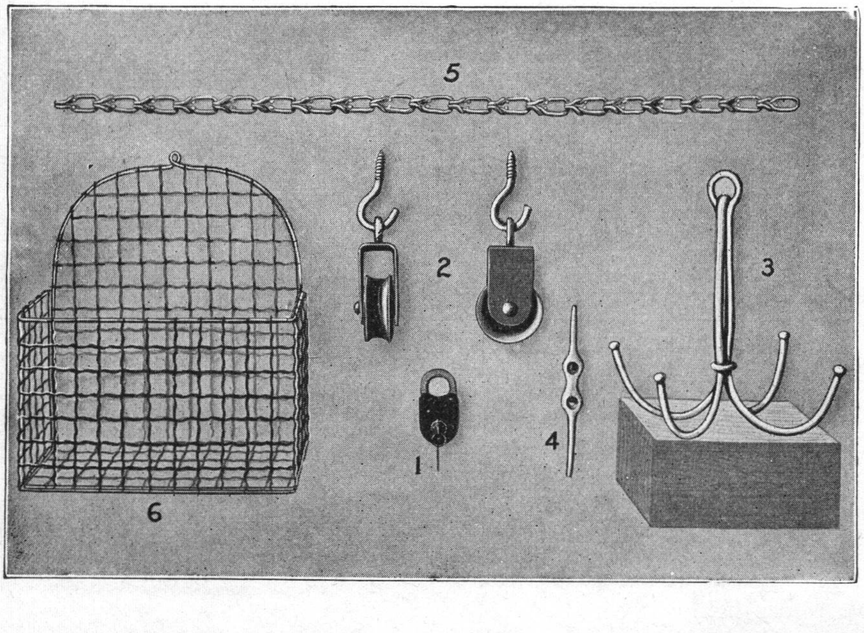
Each

Stations—Standard drop cover, with registering key attached; wt. each 1¼ lbs. $3.50

One in a box.

Per box

Dials—12 hour; 100 in a box; wt. per box 5 oz. $3.25



CLOTHES HANGERS

UNION SANITARY

Designed to be absolutely sanitary and to prevent sickness and disease. Rustproof, foolproof and sturdy. Withstands the roughest usage.

Contents of Set

	Each
1—Wire basket, 8x6x5 in.	$1.00
1—4-prong clothes hook	.55
1—Cleat	.06
2—Pulleys	.55
1—30 ft. chain, No. 1U.L.L.	1.50
1—Padlock	.66

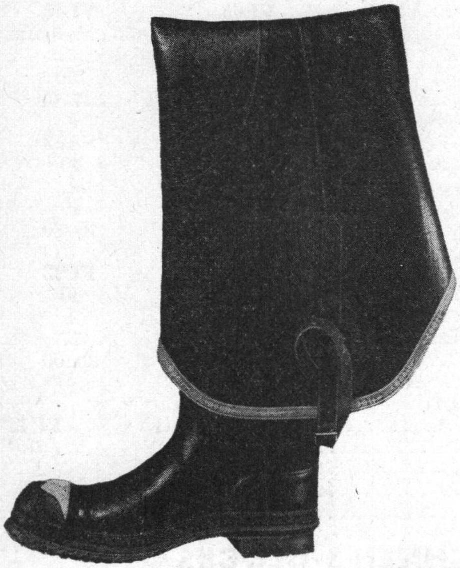
Per set

Complete Set—Comprising units described above; wt. per set 20 lbs. $4.87

One set in a box.

RUBBER BOOTS

HOOD SUPREX



With Steel Safety Toe and Non-Slip Sole

Black, with cushion insole.

Used in industrial plants, water and sewer projects and departments, building and road construction, abattoirs or slaughter houses, tanneries, breweries, laundries, garages, dairies, coal mining and other types of mining.

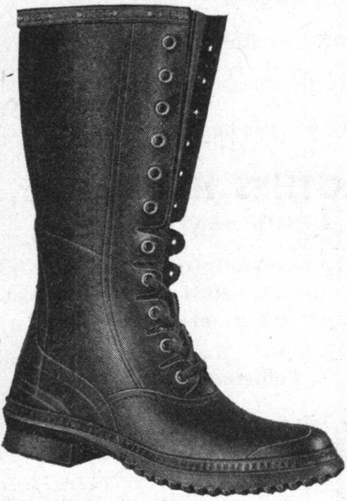
Per pair

Short—Men's sizes 6 to 11; wt. per pair 5 lbs. $8.15

Hip—Men's sizes 6 to 11; wt. per pair 7 lbs. 9.05

One pair in a box.

HOOD MINE KING



Bal Pac, with Steel Safety Toe

Net lining and flex front for increased comfort and wear.

White back stay, white gum toe cap. Rust-resistant aluminum eyelets.

Per pair

Mine King—Black; men's sizes 6 to 11; average wt. per pair 5 lbs...$7.40

One pair in a box.

RUBBER BOOTS

HOOD FLEXIPAC

With Steel Safety Toe

Comfort and economy have made the Hood Flexipac famous among miners. It has a net lining and a "flex front."

The sponge cushion insole, built into the pac, provides insulation from cold as well as protection from sharp objects under foot.

Per pair

Flexipac—Black; men's sizes 6 to 11; average wt. per pair 4 lbs...$6.55

One pair in a carton.

RUBBER WORK SHOES

HOOD WURKSHU

With Steel Safety Toe

An all black blucher cut shoe with natural finish and aluminum eyelets. Steel shank; cushion insole.

Famous for years among miners.

Per pair

Wurkshu—Black; men's sizes 6 to 11; average wt. per pair 4½ lbs. $5.65

One pair in a carton.

NOTE

In ordering boots, shoes, clothing, gloves, etc., please be sure to specify sizes wanted.

Waterproof Clothing Sizes

Sizes marked	Correspond to and intended to be worn over ordinary clothing of these sizes:
0	44 in.
1	42 in.
2	40 in.
3	36–38 in.

WATERPROOF CLOTHING

NEOPRENE LATEX

Coated Inside and Out

Lightweight; no exposed seams.

On the average outwears 2 or 3 garments of the old fashioned rubber clothing, or 3 or 4 of oilskin.

Especially adapted for miners, oil refineries, acid plants, meat packers and sausage makers, dairies, public utilities, lumbermen, and all hard work in rain or snow.

Black or Yellow

Each

No. 500-L—Jacket; ball and socket fasteners, sizes 0 to 3; approx. wt. each 2 lbs. $4.55

No. 530-L—Overall Long Pants; sizes 0 to 3; approx. wt. each 2 lbs. 4.55

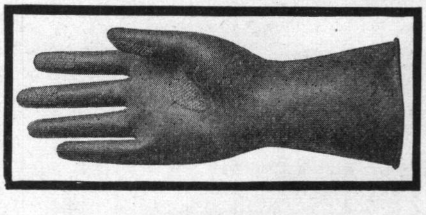
No. 536-L—¾ Length Coat; metal buttons, sizes 0 to 3; approx. wt. each 2⅞ lbs. 7.50

No. 551-L—Sou'wester Hat; sizes 6½ to 7½; approx. wt. each ½ lb. 1.25

Open stock.

RUBBER GLOVES

"PLYMOUTH" EXTRA HEAVY



Chocolate Natural Rubber

Molded, all rubber, steam cured.

Not easily torn or punctured.

For handling acids and other corrosive materials.

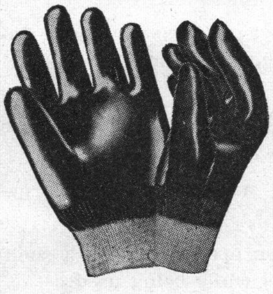
Per pair

Plymouth—14 in. long, sizes 9 through 11; wt. per dozen pairs 4 lbs. $2.00

One dozen pairs in a box.

WORK GLOVES

COATED



Black Natural Rubber Coated

Flexible weight, knit wrist style.

Per dozen pairs

No. 501—Full men's size; wt. per dozen pairs 3¾ lbs. $11.52

One dozen pairs in a box.

Black "Neox" Coated

The "Neox" coating, a special synthetic rubber and plastic compound, assures strong adhesion to fabric, high resistance to abrasion for longer wear, and greater resistance to oils, greases, acids, caustics and many solvents.

Standard weight, knit wrist style.

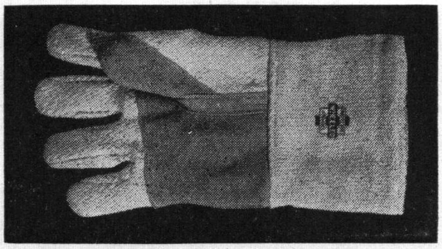
Per dozen pairs

No. 909—Full men's size; wt. per dozen pairs 4¾ lbs. $12.96

One dozen pairs in a box.

ASBESTOS GLOVES

WHEELER



No. 807

Lined

Per pair

No. 705—11 in. long; wt. per pair 1 lb. $3.55

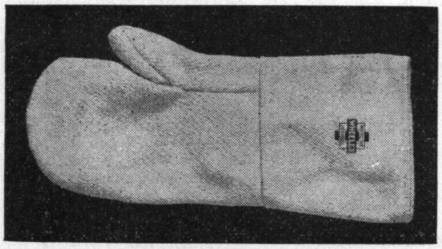
No. 707—14 in. long; wt. per pair $1\frac{3}{16}$ lbs. 4.95

No. 807—14 in. long, palm and thumb leather reinforced; wt. per pair $1\frac{5}{16}$ lbs. 4.75

Open stock.

ASBESTOS MITTENS

WHEELER



No. 695

Reversible, Lined

Per pair

No. 693—11 in. long; wt. per pair 13 oz. $2.50

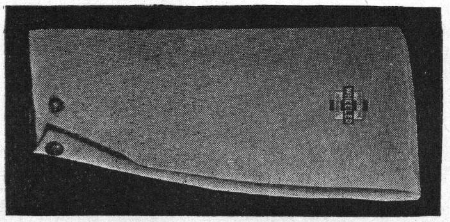
No. 695—14 in. long; wt. per pair 1 lb. 3.70

No. 834—13 in. long, double thick, wool lined; wt. per pair 1⅝ lbs. 5.85

Open stock.

PROTECTIVE SLEEVES

WHEELER



11 in. Long

Per pair

No. 1801—Underwriters' grade asbestos; wt. per pair ⅞ lb. $2.25

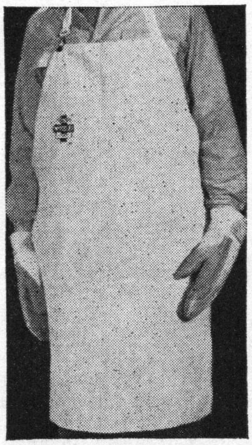
No. 1802—Flame-proof duck; wt. per pair 6 oz. 1.70

No. 1803—Chrome leather; wt. per pair 1⅛ lbs. 3.05

Note—Sleeves also available in standard 18 and 24 in. lengths.

ASBESTOS APRONS

WHEELER



Rib Type

Underwriters' grade heavy basket weave asbestos.

With neck and tie tapes.

24 in. Wide

Nos.	**405**	**410**	**415**
Length, in.	36	42	48
Wt. each, lbs.	1⅞	2	3
Each	$7.25	7.65	8.30

Open stock.

Note—Above aprons can also be furnished in the same lengths in Flame-Proof Duck and Chrome Leather.

LEGGINGS

CHROME LEATHER

Leather Flare

Long curved clock steel spring stay, rattan reed shin guard.

Per pair

No. 777—12 in. high; wt. per pair 1⅞ lbs.$7.35

Open stock.

KNEE PADS

CHROME LEATHER

⅝ in. felt padded. 3 adjustable straps.

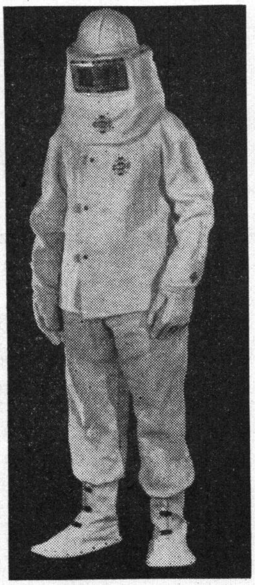
Per pair

No. 1600—Wt. per pair 1⅛ lbs....$6.50

Open stock.

FLAME-PROOF CLOTHING

WHEELER



Helmets

Asbestos covered wire head frame with adjustable, padded head band; Pyrex polished plate glass lenses.

Each

No. 1000—Wt. each 2 lbs. $13.10

Asbestos Coats

Underwriters' grade heavy basket weave asbestos.

Specify chest measurements.

Each

No. 1205—30 in. long; wt. each 5¾ lbs. $15.00

Asbestos Pants

Underwriters' grade heavy basket weave asbestos.

Specify waist measurement.

Per pair

No. 1200—Wt. per pair 4½ lbs.....$13.90

Asbestos Overshoes

3 adjustable arctic buckles.

Specify shoe size.

Per pair

No. 555—10 in. high; wt. per pair 3⅝ lbs. $13.00

Flame-Proof Duck Coats

One inside pocket.

Specify chest measurement.

Each

No. 1405—Wt. each 1½ lbs. $5.35

Flame-Proof Duck Pants

Two hip pockets with flaps.

Specify waist measurement.

Per pair

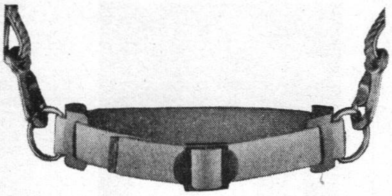
No. 1400—Wt. per pair 2¼ lbs. $5.00

Open stock.

Note—Coats and pants can also be supplied in Flame-Proof Jean cloth, 100% wool, and Chrome Leather. Standard length coats in 44 and 50 in. lengths also available.

SAFETY BELTS

BULLARD-STANLEY MARINE



A waist type belt combining the well known Morenci safety belt with a broad webbing which overlaps around the body. For greater comfort and strength.

Tested to more than 3000 lbs.

Each

Bullard-Stanley Marine—Belt only; wt. each 2⅜ lbs. $8.50

Open stock.

ROPE

Treated

With safety snap at each end.

Each

½ in. Rope—5 ft. long; wt. each ¾ lb. $4.50

Open stock.

Note—For the very best lifeline rope see Nylon Rope, listed on page 575.

STRETCHERS

ARMY TYPE

Made of 12-ounce double filled khaki attached to well-seasoned white ash posts. Forged steel folding braces; malleable iron feet.

Approved by medical department of U. S. Army. Canvas opens to size 6 feet long by 22 inches wide. By releasing braces, stretcher folds to over all length of 7½ feet, approximately 3½ inches in diameter.

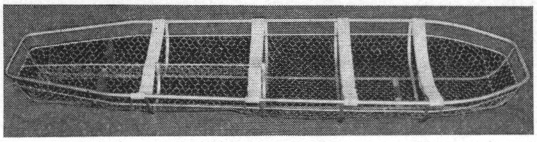
Each

Army Type Stretcher—Wt. each 22 lbs. $15.00

Open stock.

Note—Slings must be ordered separately.

STOKES NAVY TYPE



Made of heavy steel wire mesh with substantial steel frame and runners. Adjustable foot rests give accurate fit and complete protection from strains, bumps and blows. Particularly desirable where patient is to be carried up or down stairs or transported in a mine cage or skip. Webbing supports are provided. Stretcher may be used with or without splints.

Each

Stokes Navy Type Stretcher—7 ft. long over all, 22 in. wide, 8 in. deep; wt. each 35 lbs. $32.70

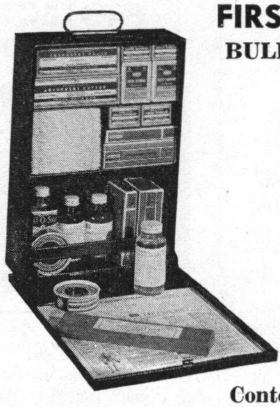
Open stock.

OUR BUYING RESOURCES ARE YOURS TO COMMAND

We welcome your inquiries and will try to get for you any item not shown in our catalog.

FIRST AID KITS

BULLARD PACIFIC



Constructed of heavy metal, finished in a green enamel inside and out.

Fasteners are attached for its use as a case to hang on wall.

Furnished with handle for carrying purposes.

Cover when open serves as a shelf for materials while being used.

Contents of No. 2 Kit

100 R-3 AB Adhesive Compresses
1 Unit R-8F Tourniquet, Tweezers, Scissors, Eye Dropper (1 each to unit)
1 Unit R-20 Aromatic Ammonia (4 vials)
1 Unit R-26 Aspirin (100)
1 Unit R-62B ¾ oz. Boric Acid Ointment (2 tubes)
1 Unit R-90 Cotton Wound Applicators (12)
2 Rolls 2 in. x 10 yd. Gauze Bandage
4 Rolls 1 in. x 10 yd. Gauze Bandage
1—sq. yd. Surgical Gauze
2 Rolls ½ in. x 5 yd. Adhesive Tape
1 Bottle 2 oz. Tincture Merthiolate
1 Bottle 2 oz. Boric Acid Solution
1 Bottle 2 oz. Oil-O-Sol
1 Bottle 2 oz. Rubbing Alcohol
1 Packet ½ oz. Cotton

Per kit

No. 2—Complete as described above, 12½x8½x3 in.; wt. each 5½ lbs. $13.30

Contents of No. 6 Kit

100 R-3 AB 1 in. Adhesive Compresess
1 Unit R-5 Ammonia Inhalant (10)
1 Unit R-8F Tourniquet, Tweezers, Scissors, Eye Dropper (1 each to Unit)
1 Unit R-26 Aspirin (100's)
1 Unit R-62B ¾ oz. Boric Acid Ointment (2 tubes)
1 Unit R-90 Cotton Wound Applicators (12)
3 Rolls 2 in. x 10 yd. Gauze Bandage
6 Rolls 1 in. x 10 yd. Gauze Bandage
2 Rolls 3 in. x 10 yd. Gauze Bandage
1—1 sq. yd. Surgical Gauze
2 Pkgs. 1 oz. Cotton
2 Rolls ½ in. x 10 yd. Adhesive Tape
25—3x3 in. Gauze Pads
1 Bottle 4 oz. Tincture Merthiolate
1 Bottle 4 oz. Boric Acid Solution
1 Bottle 4 oz. Rubbing Alcohol
1 Bottle 4 oz. Aromatic Ammonia

Per kit

No. 6—Complete as described above; 17½x12½x3 in.; wt. each 11½ lbs. $20.15

One kit in a box.

BULLARD CYLINDRICAL

Weatherproof and Waterproof

BULLARD
CYLINDRICAL
FIRST AID
KIT

Contents keep perfectly dry under all conditions, making kit adaptable indoors, outdoors, on trucks, boats or wherever first aid kits are required.

Following supplies are contained in the canvas roll inside the lightweight metal cylinder.

Contents of Kit

1 Packet R1—4 in. Compresses (1)
2 Packets R2—2 in. Compresses (4)
1 Packet R3B—1 in. Adhesive Compresses (16)
1 Packet R5 Ammonia Inhalant (10)
2 Packets R7 Triangular Bandages (1)
1 Packet R8AR U. S. Army Tourniquet (1)
1 Pair R8B Tweezers
1 Pair R8S Scissors
1 Bottle R4A Merthiolate
1 Tube R62AB ¾ oz. Boric Acid Ointment

Per kit

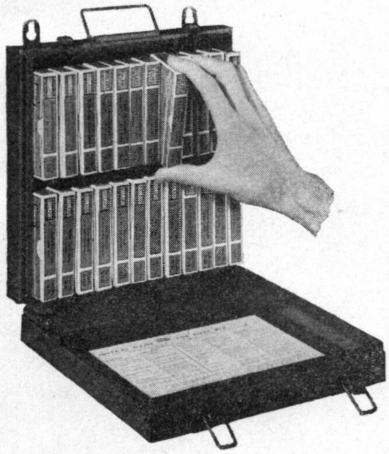
No. 51-C—11½x4½ in. over all; wt. each 2 lbs. $7.15

One kit in a box.

Note—See next page for listing of individual units or packets.

FIRST AID KITS

BULLARD



Weatherproof

The interchangeability of the Bullard unit system of first aid greatly simplifies stock keeping and ordering. The dressings and treatments are packed in cartons of unit size or multiples thereof which fit into a wide variety of kits. So, regardless of the place first aid kits are used, indoors or out, in large kits or small, the unit packets are interchangeable. They line up in orderly fashion, like books, with the titles showing clearly. Each unit contains concise, pictorial instructions on how the treatment is administered—a great aid to the more inexperienced first aid kit users.

Stock control is also simplified with unit packs. Bullard Weatherproof First Aid Kits are heavy duty containers equipped with flexible weatherstrip tubing that seals out moisture and dust. There's no chance of covers rusting on. The flexible tubing makes the kit easy to open for it "springs" the cover when catches are released. These kits are recommended for use wherever kits are subject to unfavorable weather conditions.

Contents of No. 110 Kit

No.	Contents	Quantity
R-2	—2 in. Bandage Compress (4)	2
R-3B	—1 in. Adhesive Compress (16)	2
R-5	—Ammonia Inhalants (10)	1
R-7	—Triangular Bandage (1)	1
R-8AR	—Tourniquet (1)	1
R-45	—Iodine 10cc. Mult-Aply (3)	1
R-62B	—¾ oz. Boric Acid Ointment (2)	1
R-67	—Gauze Pads 3x3 in. (4)	1

Per kit

No. 110—Suitable for 1 to 10 men, 2½x8x5 in.; ship. wt. 5 lbs. $6.31

Contents of No. 116 Set

No.	Contents	Quantity
R-1	—4 in. Bandage Compress (1)	1
R-2	—2 in. Bandage Compress (4)	3
R-3B	—1 in. Adhesive Compress (16)	3
R-5	—Ammonia Inhalants (10)	1
R-7	—Triangular Bandage (1)	1
R-8AR	—Tourniquet (1)	1
R-11	—Gauze Compress 24x72 in. (1)	1
R-33	—Eye Dressing Packet	1
R-45	—Iodine 10cc. Mult-Aply (3)	1
R-62B	—¾ oz. Boric Acid Ointment (2)	2
R-67	—Gauze Pads 3x3 in. (4)	1

Per kit

No. 116—Suitable for 10 to 16 men, 2½x6¾x9½ in.; ship. wt. 7 lbs..$9.12

Contents of No. 124 Set

No.	Contents	Quantity
R-1	—4 in. Bandage Compress (1)	1
R-2	—2 in. Bandage Compress (4)	3
R-3B	—1 in. Adhesive Compress (16)	3
R-5	—Ammonia Inhalants (10)	2
R-7	—Triangular Bandage (1)	2
R-8AR	—Tourniquet (1)	1
R-11	—Gauze Compress 24x72 in. (1)	2
R-20	—Aromatic Ammonia (4)	1
R-33	—Eye Dressing Packet	1
R-34	—Adhesive Tape ½ in.x2½ yd. (2)	1
R-45	—Iodine 10cc. Mult-Aply (3)	2
R-62B	—¾ oz. Boric Acid Ointment (2)	3
R-67	—Gauze Pads 3x3 in. (4)	2

Per kit

No. 124—Suitable for 16 to 24 men, 2½x9½x9½ in.; ship. wt. each 6½ lbs. $13.11

Contents of No. 136 Set

No.	Contents	Quantity
R-1	—4 in. Bandage Compress (1)	1
R-2	—2 in. Bandage Compress (4)	6
R-3B	—1 in. Adhesive Compress (16)	6
R-5	—Ammonia Inhalants (10)	3
R-7	—Triangular Bandage (1)	4
R-8AR	—Tourniquet (1)	1
R-10	—4 in. Gauze Bandage (1)	1
R-20	—Aromatic Ammonia (4)	1
R-33	—Eye Dressing Packet	1
R-34	—Adhesive Tape ½ in.x2½ yd. (2)	1
R-45	—Iodine 10cc. Mult-Aply (3)	3
R-62B	—¾ oz. Boric Acid Ointment (2)	4
R-67	—Gauze Pads 3x3 in. (4)	4

Per kit

No. 136—Suitable for 24 to 36 men, 2½x9¼x13 in.; ship. wt. each 9 lbs. $18.01

All above, one kit in a box.

FIRST AID UNIT REFILL PACKETS

BULLARD

Unit No.	Per 100 units	Description	Units per Container	Unit Size
R-1	$ 33.00	4 in. Bandage Compress (1 per unit)	10	1
R-2	52.00	2 in. Bandage Compress (4 per unit)	10	1
R-3	16.00	1 in. Mercuro Compresses (16 per unit)	10	1
R-3B	16.00	1 in. Adhesive Compress (16 per unit)	10	1
R-5	44.00	Ammonia Inhalants (10 per unit)	10	1
R-6K	49.00	Kip (6 ⅛-oz. tubes)	10	1
R-6U	49.00	Ungentine (2 ¼-oz. tubes)	10	1
R-6X	49.00	Kip Tannic (6 ⅛-oz. tubes)	10	1
R-7	40.00	Triangular Bandage (1 per unit)	10	1
R-8AR	40.00	U. S. Army Tourniquet (1 per unit)	10	1
R-8C	100.00	Tourniquet, Forcep and Scissors (1 each)	5	2
R-8F	109.00	Tourniquet, Forceps, Scissors, Eye Dropper (1 each)	5	2
R-8R	68.00	Army Tourniquet and Forcep (1 each)	5	2
R-9	40.00	Wire Splint (1 per unit)	10	1
R-10	29.00	4 in. Gauze Bandage (1 per unit)	10	1
R-11	40.00	Absorbent Gauze Compress (1 per unit)	10	1
R-12	100.00	Eye Dressing Packet 2-R12A 1-R12B 1-R12C 2-R12D 1-R12B Sol. 1-R12C Sol.	3	3
R-14	10.00	Drinking Cups (10 per unit)	10	1
R-15	36.00	1 in. x 6 yd. Gauze Bandage (4 per unit)	10	1
R-16	33.00	2 in. x 6 yd. Gauze Bandage (2 per unit)	10	1
R-20	49.00	Aromatic Ammonia (4 vials)	10	1
R-22	58.00	Poison Ivy Treatment (6 vials)	10	1
R-26	52.50	Aspirin (100 5-grain)	5	2
R-30	62.00	Kip Tannic (2 1½-oz. tubes per unit)	5	2
R-31K	60.00	Kip (2 1-oz. tubes per unit)	5	2
R-33	52.00	Eye Dressing Packet (small size)	10	1
R-34	30.00	½ in. x 2½ yd. Adhesive Tape (2 per unit)	10	1

Unit No.	Per 100 units	Description	Units per Container	Unit Size
R-35	$ 46.00	Iodine Swabs (10 per unit)	10	1
R-35M	46.00	Mercurochrome Swabs (10 per unit)	10	1
R-35X	46.00	Merthiolate Swabs (10 per unit)	10	1
R-40	34.00	Metaphen, 3½cc. Mult-Aply (2 per unit)	10	1
R-41	59.20	Metaphen, 10cc. Mult-Aply (3 per unit)	10	1
R-42	34.00	Merthiolate, 3½cc. Mult-Aply (2 per unit)	10	1
R-43	55.00	Merthiolate, 10cc. Mult-Aply (3 per unit)	10	1
R-44	49.00	Mercurochrome, 10cc. Mult-Aply (3 per unit)	10	1
R-45	41.00	Iodine, 10cc. Mult-Aply (3 per unit)	10	1
R-46	31.00	Mercurochrome, 3½cc. Mult-Aply (2 per unit)	10	1
R-47	27.50	Iodine, 3½cc. Mult-Aply (2 per unit)	10	1
R-48	44.00	Creosote Burn Solution, 10cc. Mult-Aply (3 per unit)	10	1
R-49	33.00	Oil of Sol 3½cc. Mult-Aply (2 per unit)	10	1
R-52	49.00	3 in. Bandage Compress (2 per unit)	10	1
R-60	25.00	1 oz. Compressed Cotton	10	1
R-62B	38.00	Boric Acid Ointment (2 ¾-oz. tubes)	10	1
R-67	17.00	Gauze Pads 3x3 in. (4 per unit)	10	1
R-68	50.40	Bullard Burn Solution (4 vials)	10	1
R-71	30.00	Castor Oil (1)	10	1
R-73	30.25	Creosote Burn Solution, 3½cc. Mult-Aply (2 per unit)	10	1
R-80	36.30	Mercresin 3½cc. Mult-Aply (2 per unit)	10	1
R-81	67.10	Mercresin 10cc. Mult-Aply (3 per unit)	10	1
R-97	200.00	I-V-Tox (4 1cc. vials)	10	1
R-98	200.00	O-Tox (4 1cc. vials)	10	1

Open stock.